



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

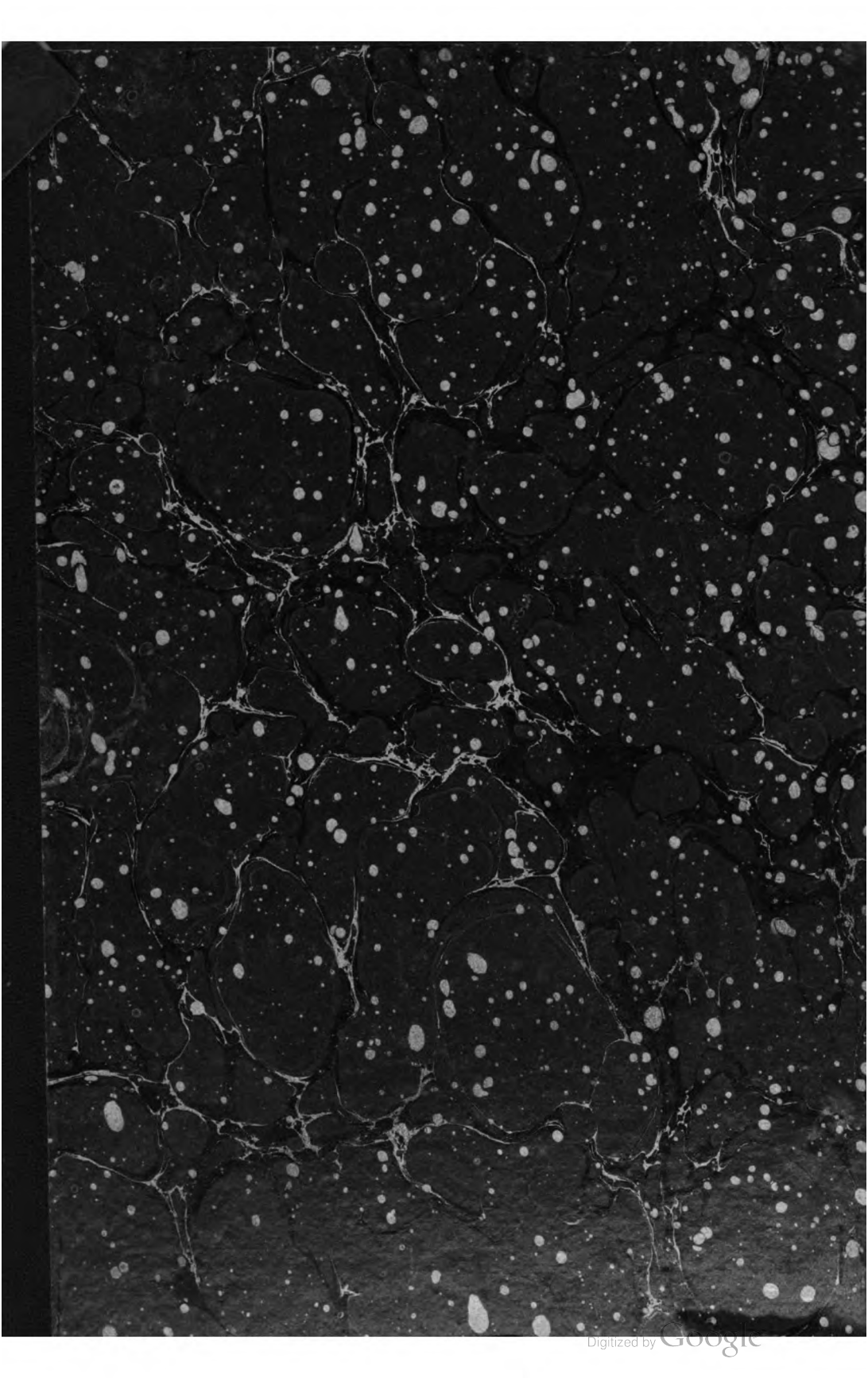
About Google Book Search

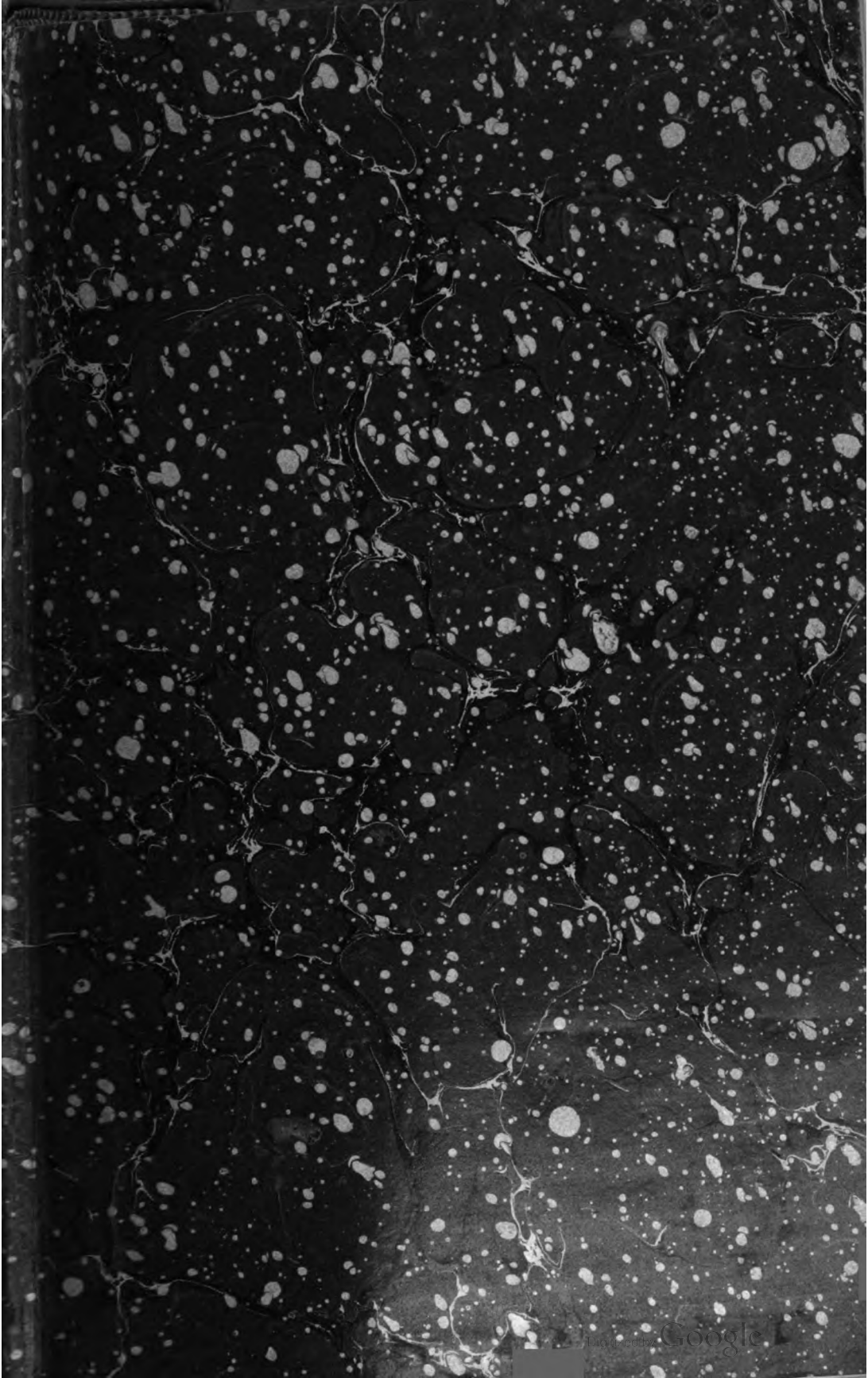
Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>



Sierra Club bulletin

Sierra Club





910.6
S572

24

109389
771



PUBLICATIONS OF THE SIERRA CLUB

Number 25

SIERRA CLUB BULLETIN

Vol. IV

No. 1



JANUARY, 1902

SAN FRANCISCO, CAL.

1902

SIERRA CLUB BULLETIN

Vol. IV.

JANUARY, 1902

No. 1

CONTENTS:

	PAGE
JOSEPH LE CONTE IN THE SIERRA <i>Frank Soule</i>	I
Plates LI. (Frontispiece), LII.	
EL CAPITAN <i>Joseph Hutchinson</i> , opp. II	
CAMP MUIR IN TUOLUMNE MEADOWS . <i>Ella M. Sexton</i>	12
THE SIERRA CLUB OUTING TO TUOLUMNE MEADOWS <i>E. T. Parsons</i>	19
Plate LIII.	
IN TUOLUMNE AND CATHEDRAL CAÑONS <i>Alexander G. Ecils</i>	25
Plate LIV.	
THE GREAT SPRUCE FOREST AND THE HERMIT THRUSH <i>Vernon L. Kellogg</i>	35
FROM REDDING TO THE SNOW-CLAD PEAKS OF TRINITY COUNTY ; (Plates LV., LVI.)	} <i>Alice Eastwood</i> 39
ALSO, TREES AND SHRUBS IN TRINITY COUNTY	
ORGANIZATION OF THE SIERRA CLUB	59
SECRETARY'S REPORT	60
REPORT OF OUTING COMMITTEE	62
NOTES AND CORRESPONDENCE	64
On the Naming of Mountains.	
Midwinter Trips in the Sierra.	
General Directions as to Routes and Camps in Trinity County.	
Clarence King.	
FORESTRY NOTES <i>William R. Dudley</i>	71
Forestry in President Roosevelt's Message.	
Appropriations to the Bureau of Forestry.	
Judge Wellborn's Decision Regarding Grazing on the Reserves.	
The Proposed Big Basin Park.	
The Lesson of a Veto (a letter).	

All communications intended for publication by the SIERRA CLUB, and all correspondence concerning such publication, should be addressed to the Assistant Editor, J. S. Hutchinson, Jr., Sierra Club, Claus Spreckels Building, San Francisco, California.

Correspondence concerning the distribution and sale of the publications of the Club, and concerning its business generally, should be addressed to the Secretary of the Sierra Club, Merchants' Exchange Building, San Francisco, California.

THE
SIERRA CLUB BULLETIN

Volume IV
1902 — 1903



THE SIERRA CLUB
SAN FRANCISCO, CAL.
1903

LIBRARY
OF THE
SIERRA CLUB
SAN FRANCISCO, CAL.

YBAQEL
ROMUL. QPQBAP? QBA.EL
YT293VBU

SIERRA CLUB BULLETIN, VOLUME IV.

CONTENTS.

Author.	Title.	Page
BREWER, WILLIAM A.	<i>Into the Heart of Cataract Cañon</i>	77
	<i>Ralph Sidney Smith</i>	274
CHURCH, J. E., JR.	<i>A New-Year Outing in the Sierra</i>	216
DUDLEY, WILLIAM R.	<i>Near the Kern's Grand Cañon</i>	301
EASTWOOD, ALICE	<i>From Redding to the Snow-Clad Peaks of Trinity County</i>	39
	<i>Trees and Shrubs in Trinity County</i>	53
BELLS, ALEXANDER G.	<i>In Tuolumne and Cathedral Cañons</i>	25
HUTCHINSON, JOSEPH	<i>El Capitan</i>	Opp. 11
HUTCHINSON, LINCOLN	<i>Red-and-White Peak and the Head-Waters of Fish Creek</i>	193
JEPSON, WILLIS LINN	<i>Mt. Whitney, Whitney Creek and the Poison Meadow Trail</i>	207
KELLOGG, VERNON L.	<i>The Great Spruce Forest and the Hermit Thrush</i>	35
	<i>Bird of the High Mountains</i>	132
LE CONTE, JOSEPH	<i>My Trip to King's River Cañon (Reprint)</i>	88
LE CONTE, J. N.	<i>Among the Sources of the South Fork of King's River—Part I</i>	177
	<i>Among the Sources of the South Fork of King's River—Part II</i>	253
	<i>Table of Elevations of Peaks in the Sierra Nevada Mountains Over 12,000 Feet Above Sea-Level</i>	285
LEMMON, J. G.	<i>Conifers of the Pacific Slope—Part III</i>	100
	<i>King's River Outing, 1902—Botanical Notes, Including an Im- portant Discovery</i>	292
MCALLISTER, M. HALL	<i>The Coast Sierra from California to Panama</i>	264
PARSONS, EDWARD T.	<i>The Sierra Club Outing to Tuolumne Meadows</i>	19
	<i>Climbing Mt. Brewer—The Climax of the Sierra Club Outing for 1902</i>	278
SANDERSON, CHARLOTTE	<i>With the Sierra Club in King's River Cañon</i>	185
SEXTON, ELLA M.	<i>Camp Muir in Tuolumne Meadows</i>	12
SOULÉ, FRANK	<i>Joseph Le Conte in the Sierra</i>	1
VENABLE, ANDREW	<i>The Ascent of Volcano Mayon</i>	228

NOTES AND CORRESPONDENCE.

	Page
On the Naming of Mountains	64
Midwinter Trips in the Sierra	64
General Directions as to Routes and Camps in Trinity County	66
Clarence King	69
A Flora of King's River	153

70547

	Page.
Trees Along Tulare Trails	153
A Winter Trip to King's River Cañon	156
Ice-Caves	159
Notes Concerning Bright Angel Trails, etc. (Arizona)	160
Grand Cañon Excursion (Arizona)	165
A Short Cut to the Grand Cañon (Arizona)	169
Letter from Capt. N. F. McClure—Containing Altitudes in the Philippines	172
A Correction as to Plate LXI.	239
Place Names for Application in the Sierra Nevada	239
Register on University Peak	242
Register on Red-and-White Peak	242
Letter from Capt. N. F. McClure	242
Scarper Peak in San Mateo County	243
New Maps, etc.	311
Le Conte Maps, etc.	311
How to Make "Skies"	312
Organization of the Montara Club	313
Another View of the King's River Outing	314
Mt. Whitney Club Journal	318
Forestry Notes—By William R. Dudley	71, 173, 246, 319

REPORTS.

	Page
Report of Secretary, January, 1902	60
Report of Secretary, May, 1902	147
Report of Secretary, May, 1903	309
Report of Treasurer, May, 1902	149
Report of Treasurer, May, 1903	310
Report of Outing Committee, January, 1902	62
Report of Outing Committee, June, 1902	151
Report of Outing Committee, February, 1903	236
Report of Le Conte Memorial Committee, May, 1902	150

We have had much experience

P A C K I N G G R O C E R I E S

especially for rough handling, and for mountain climbing. Most everything you need, in diminutive tins or packages, handy and attractive.

Price catalogue sent on request.

GOLDBERG, BOWEN & CO.

432 PINE STREET, SAN FRANCISCO

If you have n't tried our Japanese pillow or our mosquito netting ask the Outing Committee about them. Other specialties are: A shoe with Scotch heel, for men or women, waterproof and warranted to wear the trip; our special clothing and sleeping bags, which have been tried and found satisfactory for summer mountain work.

You get anything else you want in our store. Catalogue on application.

H. E. SKINNER CO.

416 Market Street

Below Sansome

San Francisco.

We furnish the Club this year a special shoe, individually made to order, which will not break in the shank or cut on the heel. It has the indorsement of the Outing Committee.



WALKOVER SHOE CO.

924 Market Street

San Francisco

NEVILLE & Co.

31 and 33 California Street

MANUFACTURERS OF AND DEALERS IN

Tents,
Awnings
Covers

BAGS, TWINES, HAMMOCKS
CAMP FURNITURE, ETC.

TENTS TO RENT

The Intelligent Traveler

studies the map before starting, and reads up
the country.

Did you ever study the map of

CALIFORNIA

issued by the

Southern Pacific Company

It is clear, comprehensive, complete. It
shows how to reach the

Finest Scenery on the Continent

The KINGS RIVER CAÑON
MOUNT SHASTA COUNTRY
YOSEMITE VALLEY
HIGH SIERRA
LAKE TAHOE
CALIFORNIA MISSIONS

CALIFORNIA is an unknown country to
many of her sons.

CALIFORNIANS! learn to know the
beauties of your own great State by reading
the literature issued by the

Southern Pacific Company

A legging that has no other like it, that won't let dirt into the shoe, and that is perfect hygienically ;

An alpenstock that won't break and that is n't too heavy

Fishing tackle specially contrived for the great fishing streams of King's River Cañon ;

And axes with scabbards ; also, hunting knives, will be furnished by

S. J. DEAN,
1502 Market Street,
San Francisco.

Are you looking for outing suits in Khaki that will not rip? We have them of our own make in Norfolks, knickerbockers, hunting coats, riding trousers, etc., that the Committee says are alright, and that we are to furnish them this year.

Fancy flannel, serge and white duck outing suits, hats and furnishings—in fact everything in wearing apparel for summer use—will be found in our store.

THE HASTINGS CLOTHING CO.
(BENEDICT & TURNER)
Montgomery, cor. Sutter Street
San Francisco



Joseph Le Conte

1823-1901

SIERRA CLUB BULLETIN.

VOL. IV.

SAN FRANCISCO, JANUARY, 1902.

NO. 1.

JOSEPH LECONTE IN THE SIERRA.

BY FRANK SOULE.

[NOTE.—Professor LeConte was a charter member of the Sierra Club.—EDITOR.]

“If you would know a man, go camping with him,” is a common saying in California, where a summer’s outing in the mountains is a pleasure almost universally enjoyed. It is a custom which brings home to us all a precious share of camp-life experience. Indeed, how could it fail to do so, when friends and acquaintances tramp or ride together over the long rough roads and trails day after day, and even night after night; pitch camp, build camp-fires, boil pots, and mess from the same dish; fish, in friendly rivalry, *vis-à-vis*, on the banks of a wild, foaming stream, or stalk together in the fresh morning twilight a big bright-eyed but wary stag?

Whether chumming on the hot and dusty trail or clambering by means of clutching hands and hobnailed shoes over the rugged bowlders of a Sierra peak, how the bond of fellowship develops and strengthens, just as among brother soldiers in an arduous campaign!

How thoughts “will out” and fancies free themselves, until each man feels that he knows the other’s inmost thoughts, his manner unaffected, and the features of his soul itself!

The open-air bivouacs, with their attendant physical fatigue and mental rest and relaxation, where all gather round the evening's council-fire and commune, either noisily or silently in spirit, lead to the voicing of one's most cherished ideas and dearest ambitions, aspirations, and confidences.

It was through such favorable conditions and surroundings as those just mentioned that I came really to know and to understand the late Joseph LeConte; and to fully appreciate his lofty nobility of soul, his devotion to the philosophy of the universe, and to realize his breadth and depth of thought, his kindly, gentle nature, and his crowning possession, the undisputed title of "one of the world's best gentlemen."

The writer of this article had the good fortune to be a member of the pioneer party which accompanied Professor LeConte to the Yosemite Valley, Tuolumne Meadows, Mono Lake, and Lake Tahoe during the summer vacation of the University of California in 1870. Such expeditions even from the State at large were rare in those days; many of the roads and trails were bad or uncertain, or perhaps both combined; but Nature in all her beauty and grandeur was there then, as she is now, and left upon our memories a picture of her magnificence never in this life to be effaced. And among the dearest of all the recollections of that tour are those relating to our personal contact and close association with "Doctor Joe," as we all lovingly and respectfully called him.

The writer was favored by being made the recipient of much of his society and conversation during this jaunt. He jogged beside the Doctor on the roads and trails, sat next him at the camp-table, and often shared with him at night a blanket-couch and cover.

The details of this tour have been admirably recorded by Doctor Joe in his "Ramblings through the High Sierra,"

recently republished by the Sierra Club; and the writer will not repeat nor enlarge upon them, but will here relate his personal impressions of his friend. Although a teacher associated with Doctor LeConte during the infant days of the University of California, when it was cradled in Oakland, and though from first acquaintance with him an admiring and enrapt attendant upon the LeConte lectures, given publicly or in academic halls by the dignified, enthusiastic, and learned professor, he had not come to fully understand, appreciate, and venerate this beautiful character until the experiences of this first Sierra outing.

The writer was with him not only in this first, but also in the last, of his many mountain excursions; and the impression and estimate formed of this great scientist and philosopher were intensified by time and confirmed by ultimate association.

Immediately upon the departure of our cavalcade from Oakland in 1870, I was moved by the intense love of nature that saturated Doctor Joe's mind and soul. He loved all men and all things. Even the dust in the road, the weeds by the hedgerow, and the shrubs on the hillside attracted his attention and drew forth his analysis and deduction.

The breadth and profundity of knowledge that he displayed in his own modest way upon this journey were remarkable. Botany, chemistry, geology, physiology, astronomy, philosophy, and the classics were ready at his call. Often when standing upon a high peak of the Sierra, or during a tramp through a dark forest of giant trees, or when gazing upward from a vast chasm of the Yosemite, his face was illumed by an inward light, and his voiced thoughts seemed inspiration.

Poetry and polite literature were to him a mental relaxation. He quoted poetry by the volume, and seemed to have an unlimited store in his memory. The beautifully descriptive and the humorous were usually on these occa-

sions given his preference. He was full of anecdote seasoned by wit and humor of a high order; and many a tedious march was converted into a column of jollity by his amusing stories, which sent a hearty laugh along the line of tired mountaineers. He had a keen sense of the ridiculous; and mankind was to him always an amusing as well as a serious study. While groaning with pain in his muscles and bones, not yet adjusted to horseback exercise, he would burst into heartiest laughter at some witty sally by our "Court Jester," Del Linderman, as he bounced along on his steed, "Dolly the Scab-Grinder," or would tremble with suppressed mirth at the recollection of Pome-roy's indignation at the behavior of his rebellious horse, "Old '76."*

The Doctor took any good-natured joke upon himself in the best of temper. He and the writer have often since laughed heartily together over the trick by which the "1870 boys" inveigled us into taking an early morning plunge in the icy waters of Lake Tenaya, although our mirth was sadly chilled on that occasion. His anger or indignation was never aroused except by meanness or dishonorable action; and his was a nature which pre-eminently turned away wrath by a soft answer, as all of us realized on more than one occasion. He was gentleness itself, and full of the kindest consideration for others, a characteristic which always prevented any exhibition of unseemly aggressiveness or offensive personality on his part, even when engaged in the warmest argument or most earnest discussion. He never failed to realize his position as a gentleman throughout this rough-and-ready trip.

He was very facile with his pencil; and his note-books used on his mountain excursions are filled with sketches possessing artistic merit that represent mountain-peaks,

* For particulars concerning the ill-behavior of '76, see "Ramblings through the High Sierra."

gaping chasms, primeval forests, as well as humorous and amusing peculiarities of members of his Sierra parties. For example: "Richardson's legs." (This friend was a Shakespearean delineator, and the sketches represent his legs only; as, in the "Prelude," "they become agitated," "make a rush to the front of the stage,"—"they warm up to the subject,"—"horried astonishment," "scornful defiance,"—"stops there," and "bade the rest retire"—"Henry V," etc.) In this portrayal the emotions were very humorously delineated.

On his 1870 trip Doctor Joe was delighted from the very first with the novelty of his experience; for although he had enjoyed the mountains of Georgia and the Great Lakes of the Northwest before coming to the Pacific Coast, he had never before engaged in a rough-and-ready ride of this kind, so that each day brought its new experiences and pleasures.

He, with the rest of the party, was profoundly impressed at sight of the Mariposa Big Trees, particularly by the "Grizzly Giant." His meetings with the Indians, quite numerous in and around the Yosemite thirty-one years ago, were interesting to him, as affording a race study; but his awe was not called forth, nor his love of the sublime in nature fully gratified until he for the first time stood upon the brink of Glacier Point and gazed down into the awful abyss below, all unknowing that he looked upon the very spot where, thirty-one years later almost to the day, his gentle spirit was to pass from earth. Turning all about from the Illilouette, Little Yosemite, Nevada, and Vernal falls on his right hand to the indescribably grand Half Dome, Mirror Lake, Tenaya Cañon, North Dome, Washington Column, and the Royal Arches in front, and then toward Yosemite Fall, weaving about and roaring in its vast descent, and majestic El Capitan on the left; with eyes dilated, face expressing awe, astonishment, and delight,

and chest heaving with emotion, he lifted high his hands and exclaimed emphatically, "This is a grandeur incomparable; the most wonderful sight in nature!" From that moment the study of the Yosemite, its origin, development, and history, was a lifelong and absorbing interest and delight. He published much concerning this valley and its environments, and was perhaps one of the best authorities in the whole world concerning its wonders.

In the prosecution of his geological investigations, he visited many other parts of the Pacific Coast, in particular her mountain regions, for he loved the mountains; but he always returned to his first love in nature, and finally died in the grand cañon toward which he had so often and so gladly retraced his steps.

Professor LeConte from the time of his early youth had lived an outdoor life, as far as the pursuit of his studies would permit, and was, in consequence, an excellent swimmer, a gymnast, and a pedestrian and mountain-climber. Such life established and maintained that wonderful vigor and healthful constitution which bore him up in all his long-continued and laborious studies and enabled him to write so voluminously and well, and carried him on through his active and industrious seventy-eight years.

But he attributed much of his strength and mental vigor in his later years to his annual jaunts into the Sierra, and to the freshening and invigorating influence of the mountain air and scenery. No doubt there was much truth in this of value to us as well as to him.

The bare enumeration of his many trips to the mountains, made in addition to the studies, investigations, and writings in which he was always engaged, gives us an idea of the great mental and physical activity and energy of the man.

In 1870 he spent six weeks in the mountains, as related by him in the reprint by the Sierra Club.

The summer of 1871 found him investigating the geology of Oregon, and particularly that adjacent to the Columbia River.

He revisited the Yosemite Valley and Lake Tahoe in the summer of 1872, accompanied by Robert L. McKee, George Reed, Clarence Wetmore, and Julian LeConte, his nephew.

In 1873 he renewed his study of the Columbia River and its adjacent territory.

In 1874 he visited Lake Tahoe, staying at Yank's Hotel. Mrs. LeConte, their daughter Carrie, and their only son, "Little Joe," completed the party. The latter, then a mere lad, but now noted as a climber and photographer of mountains, and as best acquainted among our "academics" with the Sierra from Shasta to Whitney, made his first ascent of a high mountain. He accompanied his father on the latter's trip to the summit of Mt. Tallac, and was greatly and permanently impressed by this first experience and the panorama displayed from that peak. Doctor Joe revisited the Yosemite again in 1875, but unfortunately was seriously injured by his runaway saddle-horse, and was compelled to abandon his tour through the Yosemite to the King's River country.

In 1878 he formed one of a Yosemite party which traveled in a large covered wagon from Stockton, and, following the Big Oak Flat road, camped in the Yosemite. On their return they visited the Calaveras Big Trees.

In 1879 Professor Joe visited Portland, Oregon, the Columbia River country, the Puget Sound region, and the Frazer River district.

In 1882 Dr. LeConte organized a coaching trip to the Yosemite, and set out direct from Berkeley. In his party were his cousin, the late Dr. John L. LeConte, the celebrated entomologist of Philadelphia, and his son John. Their route was via the Mariposa Grove to the Yosemite, and a return by way of Big Oak Flat.

In 1883 the LeConte family, together with the Nesbit family, camped near Arrowhead Springs, in the Sierra back of San Bernardino.

Professor Joe, accompanied Captain Dutton, of the U. S. Geological Survey, in 1885, to Mt. Shasta, completed the circuit of that mountain, exploring its base thoroughly, and then proceeded to Klamath Lake, Oregon, and to Crater Lake.

In 1886 he spent the summer upon the crest of the Sierra, at the Summit Hotel.

In 1887 the Doctor and his son camped in Modoc County with D. W. Janes. Afterward they went to Reno, Nevada, thence 260 miles north, to Surprise Valley, passing Pyramid Lake and the "Sink of the Truckee," and camped at the head-waters of the Pit River.

In 1889 he rode from Berkeley to the Yosemite, accompanied by his son and a few Berkeley friends. On this trip the Doctor made his first visit to Hetch-Hetchy Valley, where he camped during a week's time. The party then moved to Tuolumne Meadows and ascended Mts. Dana and Lyell.

In 1893, after an interval of four years, he felt that he could not longer remain away from the "grand valley," and proceeded there alone, meeting his son and camping for the summer.

In 1894 he passed the summer in the Yosemite, staying at the Sentinel Hotel.

The year 1895 found him at McKinney's, Lake Tahoe, where he passed the summer with his family.

In 1897 he once more spent the summer at the Sentinel Hotel, in the "great valley."

In 1900 he rode a horse from Millwood to the summit of Kearsarge Pass, the crest of the Sierra in the wildly grand King's River country, and this, too, when he was seventy-seven years of age. In his party was his son "Joe."

In 1901, thirty-one years subsequent to his first visit,

he returned to the Yosemite Valley for the last time. He was extremely desirous to show the wonders of that grand region to his daughter, Mrs. Davis, who, long a resident of South Carolina, had never enjoyed the scenery of the valley. Although warned by his devoted wife as to his advanced age and loss of physical strength, and against the fatigue and anxiety attendant upon his proposed journey, his paternal affection, combined with his love of science and of the sublime, overcame his hesitation and gave him assured confidence in his own powers.

The writer found him at the railway station in Oakland, as light-hearted and expectant as when we had set out together from the same town, for the same destination, thirty-one years earlier.

"Well, Doctor, we had a delightful time thirty-one years ago. Let us hope for as good a one now."

"Yes," replied he, "I am as eager and enthusiastic now as I was then."

He was happy at the thought of revisiting (for the eleventh time) the great Yosemite, and of showing to his dear ones the unrivaled scenery of that mountain fastness.

Standing upon the veranda of the hotel at Wawona he said to me: "I have retraced in memory every day's march of our excursion in 1870. Can you point out our camping-ground here at Wawona?"

I looked around me and confessed that I could not; the place was so greatly changed and built upon.

With a pleasant smile and a merry chuckle of triumphant recollection, he pointed along the front line of the veranda to the open field near the stream, and said: "Do you see those three trees standing together? Well, there were four of them thirty-one years ago, and you and I spread our blankets beneath their branches."

"Yes, I recall it all now," I replied. And I marveled at his wonderful memory.

"And don't you remember," said he, "how you hung your gold watch on a tree above your head that night, and set out early the next morning for the Yosemite, forgetting it? And how Jimmy Perkins rode all the way back from the valley and brought you the watch safe and sound, notwithstanding your belief that the Indians had found it?"

"Yes," I replied, "I do remember it now, though I had forgotten it. And wonderful to relate Doctor," I added, "the watch was so afraid of the Indians that it is running still." He laughed as merrily over this small joke as would a young lad.

On that day he revisited the Mariposa Grove, and drove into the valley the next (July 3d), arriving at the Sierra Club's rendezvous, Camp Curry, in a fatigued condition. He realized that the elasticity of his younger days had departed, but he was as joyous and enthusiastic as ever.

He spent the next two days in driving around the valley with his daughter and their friends, in walking to objects of interest near at hand, or, during intervals of rest in camp, in chatting with his numerous friends and the strangers who insisted upon meeting him. He was geniality and hospitality personified—a Southern gentleman of the old school; and undoubtedly his physical strength was severely overtaxed during those two days. The history of his earlier trips, his hypothesis of the formation of the valley, and geological questions innumerable were all gone over patiently for the edification of his ever-gathering listeners; but nature gave out at last. On the evening of July 5th, the sad words were whispered around the camp that "dear Doctor Joe is very ill." He was in great physical pain, caused by angina pectoris, but his daughter and their intimate friends did everything possible throughout the night to alleviate his sufferings. In the morning he seemed to be resting comfortably; so much so, that his physician left his bedside to procure additional medicine



PROF. LE CONTE AND PARTY AT THE VERNAL CASCADES, YOSEMITE VALLEY.
From the last photograph of Prof. Le Conte, taken July 5, 1901, by Mrs. Frank Soulé.

El Capitan.

**At last to him belongs the dignity supreme:
Le Conte — Joseph Le Conte — is dead.**

**O mighty mountains! was it your love, your
jealousy,
That took him from us when he sojourned so
confiding mid your fastnesses
Where he had wandered oft before so safe?**

**Kneel! Lay on him azaleas, mountain lilac,
And make his monument El Capitan.**

JOSEPH HUTCHINSON.

PALO ALTO, July 7, 1901.

from the hotel. At 10 A. M. Professor LeConte turned on his left side. At once his watchful daughter noticed a great change come over his face and said, "Do not lie upon your left side, father; you know it is not good for you." He smiled, and uttered his last words in this life, "It does not matter, daughter." In five minutes' time the revered one was dead.

His sudden and unexpected death was an unspeakable shock to all in the valley. Only twenty-four hours previously he had visited with his party the picturesque Vernal Cascades, above the Happy Isles, and while there had good-humoredly consented to be photographed, affording the last picture of him ever taken.

The sad news spread throughout the valley like the report of a mournful minute-gun. A solemn sky seemed to lower upon the peaks and cliffs, and a heavy atmosphere of loss was all-pervading. Scores of his friends quickly gathered to mourn with and to comfort his relatives and intimates. University students and graduates, who venerated Doctor Joe, prepared his casket, bound it upon the coach, covered it with the laurels and pines he had loved so well, and with uncovered heads and mournful hearts saw the earthly remains of their old master set out on its last return from the valley, escorted by the devoted daughter and a faithful friend; watched it until it disappeared in the darkness upon the long mountain road, lighted only by the stars. And so passed away the soul and the body of that great and good man, Joseph Le Conte.

CAMP MUIR IN THE TUOLUMNE MEADOWS,
WHERE THE SIERRA CLUB WENT A-CAMPING.

(A WOMAN'S VIEW OF THE OUTING.)

BY ELLA M. SEXTON.

"Come, all you High Si-eerys!" was the slogan that called us to the camp-fire—a slogan first heard in Yosemite Valley from mighty lungs that sent this cheerful cry echoing from South Dome to Glacier Point, three thousand feet above us.

"Come, all you High Si-eerys!"—and a circle of eager, expectant faces gathered under the tall pines and round a splendid cone of leaping flames. Myriads of sparks shot up to the dark sky and brilliant stars, while grave professors, giddy co-eds, the poet, the historian, and sundry medical, clerical, and legal lights blushed alike in the camp-fire's rosy glow. For here was the Sierra Club of mountain-lovers, equipped and more than ready for this its initial expedition to those high meadows where the Tuolumne River, new-born of Mt. Lyell's glacier, lingers among the wild flowers before taking its long series of playful slides and swift rushes to the Grand Cañon miles below.

None of these "High Si-eerys" knew when the party was to start, for alarming rumors of great snow-drifts, of broken bridges and washed-out roads delaying the freight-teams had reached the camp. The real exodus, however, came three days later, and then what a girding on of knapsacks and tin cups, what a marshaling of alpenstocks there

was, since the way lay upward along the steep Yosemite Falls trail to the rim of the valley.

Under great oaks and by dewy, fragrant hay-fields, with the valley dust rising as the sun dried up the dew, we "hiked along," in mountain parlance, with the cool spray of the lower fall greeting us, and soon the zigzag, rocky path led upward. Our beasts of burden took it patiently, with only an occasional deep sigh or groan at the infrequent breathing-places. The mighty gorge unfolded beneath us in an ever-changing panorama. An hour's climb brought the procession to the cañon between the two great falls, and with the thunder of Upper Yosemite throbbing in the warm golden air, we rode through this grassy vale sweet with laurel and wet with misty spray.

Up again, while the roar of the torrent in its sixteen-hundred-foot plunge drowned our feeble shouts. Scarcely daring to look down over the slippery rocks or up to the sublime wall of overhanging granite, we clung in desperation to the saddle and hoped to behold the top. The distressed mules panted and heaved, but never failed to set each little hoof securely; the last turn came, and there was a long sigh of relief. We looked silently down three thousand feet and more to the floor of Yosemite's wonderful chasm, and then pressed forward over bare heights where the glacial markings were plain, crossing the foaming Yosemite Creek hurrying to its drop at the falls, and over endless great rolling hills. Here was the "sugar-pine belt," the trees six or eight feet through and with cones a foot long hanging from their light-green crowns of foliage. The forest vistas through these tall, straight trunks were grand, affording a fine example of the beauty of an untouched Sierra woodland. Then, as the altitude increased, both black and silver firs began to grow plentiful, and under them the strange snow-plant, an intense scarlet, fleshy, and succulent spike set with bell-shaped flowers like

a very tall red hyacinth,—supposed to be a parasite on the roots of the black fir, and only coming when snow has gone from the spot.

We reached the advance-guard of walkers at Porcupine Flat, and there, under magnificent firs and cedars, was our first camping-spot. The supper-call was the melodious whanging of a tin pan, and in line, like soldiers, we held out the individual and ubiquitous tin cup for the first course of soup and hardtack. A log or handy stone was the dining-chair, and no true mountaineer ever rinsed his cup for the following black coffee or nut-brown tea. A tin plate heaped with beans, potatoes, and a remarkable corned-beef stew was the next course, and this progressive dining permitted conversation with a second partner and a different seat for this part of the feast. Our mountain appetites disposed of everything, and ladies used to nibbling bonbons, chicken-wings, and sweetbreads ate what was in sight, polished up their tin plates, and called for more.

So the chilly dusk fell upon us, and the first truly Sierra Club "pow-wow" was held round its own glorious camp-fire. Almost too tired to enthuse much, we scorched our faces while the snow-drifts sent cold blasts against our backs, had a little singing, an announcement that Sunday was to be spent at Porcupine Flat, and then each leg-weary or mule-jolted pilgrim hunted repose under the stars.

Most amusing were the elaborate preparations for the slumber all sought and few found. One lady near me donned two sleeping-robos, one pink and one black, a pair of yellow slippers, tied a blue bandanna over her head, and then crawled into a sleeping-bag with much pinning of giant safety-pins and tying of countless strings. In five minutes she suddenly sat up in her chrysalis of blankets (with great damage to pins, strings, and feelings) to say "Shoo!" to a wandering horse that fancied a tender bunch of grass near my lady's head.

The bell-mare roamed up and down with maddening persistence, too, and stones, sticks, and pine-cones made themselves prominent in the fir beds. On the whole the frosty morning was welcomed, though dressing and a dip into the melted snow of the brook resulted in much shivering.

We saw at this camp, in sunny stretches where the snow had melted earliest, the so-called alpine meadows of the brightest, greenest grass crowded full of tall spikes of pink shooting-stars, or dodecatheons. Blue larkspur, a smaller sweet-scented white one, and very tiny yellow, white, and blue violets also dotted the grass. Scarlet and yellow brodiaeas, orange tiger-lilies, and in the marshy places pink mimulus and the golden wild musk-plant were plentiful. Now, too, carpets of very tiny flowers appeared in great profusion, each of the millions of small blossoms being a perfect flower no larger than a pin's head. The flora of high altitudes is a perpetual delight and, as we were to find, a calendar of blossoms that varied from spring to late summer, flowering according to elevation and not time of year.

Some six miles' tramping through fir-woods and tamaracks was the next day's trip. While plodding along over granite hillsides and ridges strewn with boulders literally as large as a house, we caught a glimpse of blue Lake Tenaya in the distance, and on descending to the meadows skirting that body of water a race of savage and hungry mosquitoes presented their ready bills. Having been forewarned of these pests, our "High Si-eerys" went into the temporary retirement of head-nets. These were a sort of maddening bird-cage of white bobinet and wire rings, very hot and blinding, but mosquito-proof at least.

Lake Tenaya was a pretty sheet of clear, shallow water, lying under the shadow of a great mass of snow-flecked granite, and in the forest beside it was our halting-place for the night. Not till cold twilight did the belated

baggage get in, and then there was a great scurrying to unpack blankets and make hasty sleeping-quarters in any old place. Camp-fires blazed near every group of sleepers, and no wandering horses, nor even the alleged cry of a mountain lion, could rouse the tired ones.

The following day tried our souls indeed, and incidentally blistered not a few tender feet; but finally we struck the first of the Tuolumne Meadows and could hope for a goal at last. Between us and the invisible river lay stretches of grass, marsh, and mosquitoes, the most distracting variety of this interesting family we had yet encountered. A magnificent panorama of Sierra mountains walled in the horizon—grand Cathedral Peak with its long roof-shaped summit, crowned at one extremity with cathedral spires; Unicorn, whose sharp horn to the right of the snowy bulk had earned its fantastic name; Echo Peak and others to the south, and the Dana group we were drawing nearer to in the eastern end of the valley. The way was musical with brooks and swirling, foaming streams, each having a perilous crossing of slippery logs or widely separated stepping-stones where most invitingly the cold waters rippled over weary feet. So the last of the ten-mile tramp was traversed and permanent camp was reached in tired thankfulness.

Next day the creamy-white tents were pitched picturesquely on rocky knolls or under the pines and tamaracks on the southern bank of the Tuolumne, here a rushing river some fifty feet wide. Army cots were unfolded for the sybarites who found Mother Earth's bosom rather a hard one, the two excellent Chinese cooks set to work at a range warranted to bake for a mess of a hundred, and the "High Si-eerys" were in regular possession of their dreamed-of mountain-camp.

Then came delightful lazy days, when brilliant sunshine, an enchanting view of eternal snows on Mt. Dana or Mt.

Gibbs, and the music of the cascades near by made lounging round camp perfection enough. Or there were trifling three-mile tramps to an ice-cold soda spring bubbling up in its iron-reddened basin across the river and effervescing with lemon-juice and sugar into a draught fit for the fabled gods.

There were solemn hours, too, when the mountaineers looked disdainfully at us feeble "tenderfeet" as we set off with trusty alpenstocks, a light lunch, and much courage to conquer the jagged peaks, loose talus, and snow-fields of Mt. Dana. That proved an exciting day for even the "stay-in-camps," since the party had to be ferried over the Tuolumne on a primitive log-raft which dipped to the swift current and elicited shrieks and wet feet from the feminine passengers and laughter from the party on shore. Then the climbers were so delayed by ten long miles to the foot of the mountain, the hard ascent and a weary ten miles back to camp, that relief-parties had to go out to kindle fires at stream-crossings, and it was nine o'clock before the last straggler was ferried over on the shaky raft.

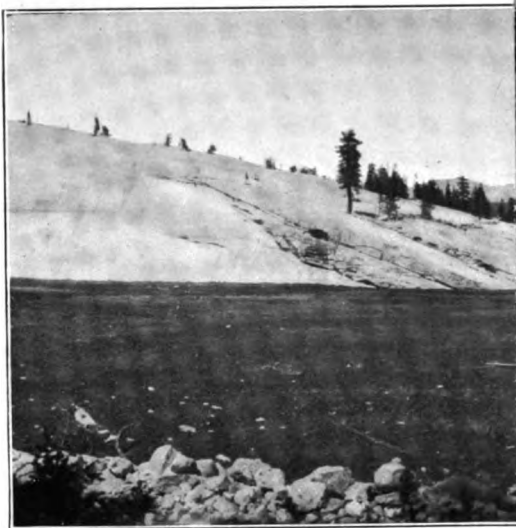
For several days thunder-storms gathered in the afternoons, and showers capriciously drenched the camp and avoided other localities a mile or so away, while the sunsets on piled-up clouds and snowy peaks were the admiration and despair of our artists and poets.

Down the meadows and rock-ribbed banks of this newborn, tourist Tuolumne, as John Muir calls the river, to the great fall at the opening of the Grand Cañon proved a day to be remembered. Muir, the prince of mountain-lovers, was guide and apostle, and his gentle, kindly face, genial blue eyes, and quaint, quiet observations on present and past Sierra conditions impressed us unforgettably with the "sermons in stones, books in the running brooks" he knows so well.

All too swiftly flew the days, each ended by a gather-

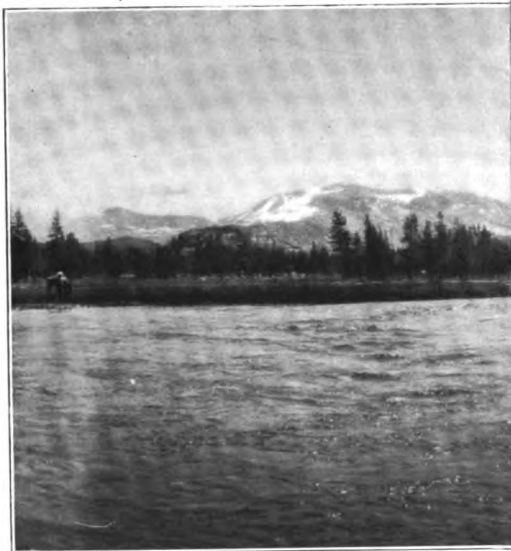
ing round a glorious blazing camp-fire, while Professor Dudley, of Stanford, talked on the Sierra forests, C. Hart Merriam, the eminent biologist, explained his system of classifying the animals of these high altitudes, John Muir, as president of the "High Si-eerys," modestly introduced others, and many lesser lights told incidents of the day's happenings, or songs and stories. Each evening some familiar faces were missed as the second week wore on. Pilgrims retraced their way, either by the Cathedral Peak trail, Clouds' Rest, and Nevada Falls to the Yosemite, — twenty-seven miles of tramping in one day, which many ladies accomplished, — or the Lake Tenaya and Porcupine route, by stage and horseback-riding.

So the inevitable day came when we looked our last on snowy mountains and rushing river, and with precious cameras loaded with snap-shots or time-exposures, and more precious memories Time himself cannot obliterate, went out cityward assured of the Sierra Club's successful expedition.



Mt. Gibbs ↓

Mammoth Mountain ↓



THE SIERRA CLUB OUTING TO TUOLUMNE MEADOWS.

(A MAN'S VIEW OF THE OUTING.)

BY E. T. PARSONS.

In the High Sierra, back of the Yosemite Valley, surrounded by snow-peaks and guarded by sentinel-like, glacially polished granite domes, are beautiful mountain meadows, once the beds of immense glacial fields that originated on the lofty summits of that region. In extent and beauty the Tuolumne Meadows rival any similar mountain region, and here the Sierra Club this year enjoyed its first annual outing. During the latter part of June and the first week of July the mountaineers assembled in the Yosemite Valley, there to revisit the scenes familiar to most of them and train for the more serious enjoyment of the higher altitudes.

It was in the Yosemite Valley, during this preliminary gathering, that the Nestor of California mountaineers, Joseph Le Conte, surrounded by his loving disciples and friends, lived the last happy hours of a delightful life. Those who were with him on his last drive about the floor of the valley will never forget their visit to the foot of the lower Yosemite Fall, where, standing on a rock in the spray from the falling waters, he raised his arms aloft and shouted in the exuberance of his joy and delight at the magnificent spectacle before him.

After his passing, the outing continued as planned, for there could be no doubt what his wishes would have been.

To those who loved him and revered his memory it was as if his kindly presence had been with them on the trip, and the voice of Nature seemed to speak a more forceful message of the wonders and magnificence of creation which had been the study of his life.

The wagon-train of commissary and supplies had been started in from Merced over the Tioga Road, and we were to join it at Porcupine Flat, going out of the Yosemite Valley over the Yosemite Falls trail on July 11th, but the wagon-train having met with delays on the road, due to heavy snows and broken bridges, word was not given to the expectant band of mountaineers until the evening of Friday, the 12th. The start took place on Saturday, the 13th, at 5 A. M. Some rode horseback out of the valley, but nearly all of the party walked out over the trail. Few of us will ever forget this delightful tramp, starting as we did in the cool of the early morning, avoiding the heat of the day with its discomforts and enjoying the views of the valley as it spread out before us. The Yosemite Fall was at its best, and the early morning breeze from the east spread it lacelike over the face of the cliff, as if to hide and soften any sternness of outline.

The entire party of ninety-six rendezvoused at Porcupine Flat that night, remaining there over Sunday. Many of the party climbed to the summit of Mt. Hoffman, 10,921 feet, during the day. It was the first serious climb of the trip, and enthusiastic were the reports of the climbers on the magnificence of the views from its summit. To most of them it was the first mountain-climb of their lives, and they were delighted at their ability to conquer a real mountain and encouraged to attempt the higher peaks to come later in the trip. From a point about half a mile south from our encampment we enjoyed a magnificent view of Half Dome and Clouds' Rest, looking across Tenaya Valley and cañon.

From Porcupine Flat to the permanent camping-place the trip was made interesting by the obstacles to be surmounted, and it was a sight to see dignified college professors, wily limbs of the law, deft doctors, and reverend clergymen join gleefully in rolling rocks, lifting logs, and shoveling snow to make way for the commissary, while the road-makers sent out by the owners of the Tioga Road used dynamite where blasting was necessary and moved more serious obstructions with their teams.

Monday night we camped at Lake Tenaya, arriving there early in the afternoon. Swimming and fishing parties enjoyed every moment at the lake. A more beautiful scene than the camp that night could scarcely be imagined—the moonlit lake in front, and beyond it the grim outlines of the granite mountain, Tenaya Peak, with the large camp-fire on the lake shore, and, back up the slope midst the trees and great boulders, the small camp-fires, lighting to couches, not downy but restful, the tired but happy travelers.

Tuesday evening we reached and established our permanent camp in the Tuolumne Meadows, naming it "Camp Muir," in honor of our president. Here, to the delight of our cooks, we placed our Buzzacott range and set up our Sibley tents and established headquarters for the various excursions that filled the time of our stay.

It was not long before our engineer corps constructed a raft which swung from a rope in the bend of the river; but the instability of the raft caused us to seek a more permanent crossing, and trees were felled making a foot-bridge for easier access to the delightful trips across the river.

On Thursday, the 18th, forty-nine of the party tramped to Mt. Dana, ten miles away, following the Tioga Road through emerald meadows, crossing sparkling, tossing brooks, passing under arching evergreens with glorious vistas of snowy ranges to the southward, until the base of the

mountain was reached, when all successfully climbed to the summit (13,050 feet) and registered in the records there. We returned to camp that night a weary but delighted crowd, having enjoyed the glorious views of the High Sierra and of the Mono Lake region to the eastward. The climb of Dana was a tedious one. There was but little snow on its crest, and the way over the large loose, broken rocks was wearisome, but the thrill of conquest and the fascinating features of mountain scenery amply repaid the tramps. Nearly all of the women in this party were Berkeley or Stanford girls, and their vigor and endurance were a revelation to all of us, demonstrating as they did that health and vigor go with college life. At no time during the outing did the college women give out or find fault, nor did they delay or prove a drag on the progress of the excursion. One confirmed mountaineer said that it was the first time he had ever been camping with women, and that he had started in with serious misgivings, but after this experience he would never go to the mountains again without the added pleasure of the companionship of women.

The most noteworthy event of the outing was the climb of Mt. Lyell (13,120 feet). Twenty of the party went on this expedition, all of whom had proved their mountaineering qualities by the work they had already done. The start was made at noon, July 20th. The pack-horses carried blankets and provisions to Camp Lyell, ten miles away, at the head of the upper meadow near the base of Mt. Lyell.

The party was roused at 3 the next morning and breakfasted, ready for the start at 4:30. The first part of the climb was made slowly over the broken rocks of the basin at the head of the valley and up on to the flank of the mountain. Snow was soon encountered and some steep snow-climbs enjoyed. Good progress was made up on to the Lyell Glacier and along the snow-fields that extended several miles up to the broken rocky pinnacle at the sum-

mit. The surface of this snow-field had been honeycombed by the sun, making travel tedious, and a slow pace was set by our leader, Mr. Colby. However, by 10:30 we were all at the base of the rock summit. Here we found real danger awaiting us. The broken rocks of the peak, loosely piled on top of one another and almost perpendicular for nearly 300 feet, seemed ready to topple and fall on us every minute. However, without accident, all registered on the summit by 11:30. Never was a luncheon eaten with more magnificent surroundings. Far to the south extended the snow-capped Sierra, with magnificent Mt. Ritter in the foreground, while near at hand was Mt. Kellogg, and to the westward Mt. McClure. Some interesting photographs were made of these snow-peaks, particularly Mt. Ritter, As gathering clouds gave warning of a coming storm, an early start for the lower regions was made. The very steep snow-slope below the crest was tempting to many, and some undignified slides were enjoyed by both the sliders and the beholders. Before we reached Camp Lyell it began to rain, and midst shower and sunshine we made our way to Camp Muir, all getting in by 6 P. M. We who had climbed Mt. Dana voted Lyell less irksome to climb and by far the most enjoyable ascent of the outing.

There were trips for the less ambitious — to the crest of Lambert's Dome, which loomed up 1,200 feet opposite our camp; to Cathedral Lake; to Tioga Lake, where quantities of fine trout were caught; and to Bloody Cañon.

At the large camp-fires every evening the grave and the gay prevailed by turns. Professor Dudley, of Stanford, gave some delightful talks on the forestry of the region. Dr. C. Hart Merriam, of the United States Biological Survey, who was in that region with his family and party for the summer, joined our encampment while we were there. He told us of the bird and animal life of the Sierra. John Muir, our honored and popular president, turned the pages

of Nature's book for us, and not only beside the camp-fire, but during many rambles about the region, explained the processes of creation in the carving out of the valleys, the polishing of the domes, and the slow replacing of icy wastes with flowery meadows and beautiful lakes, rivers, cascades, and falls.

Theodore Hittell, noted for his scholarly historical researches, read a fascinating account of the incidents leading up to the discovery of the Yosemite Valley by white men and the circumstances under which it was first visited, seen, and named by them.

Mirth and frolic, too, had their place at the camp-fires,—song, story, recitation, and music, with an occasional poem inspired by the surroundings.

On the 22d and 25th parties left for home, and on Monday morning, July 29th, Camp Muir was finally dismantled. We rose at 4 o'clock, breakfasted at 4:30, and at 5 o'clock were on our way over the Sunrise Trail to Yosemite Valley. This tramp of twenty-four miles was perhaps the most enjoyable of the outing. Varied in grandeur and beauty was the panorama of alpine scenery, valleys and mountains, open flowery meadows and timber, rivers and waterfalls, near-by castellated peaks and far-away snowy crests,—an unceasing succession of delights to the lovers of nature who were enjoying the last day of this first club outing. By 6 P.M. the entire party had arrived at Camp Curry to leave for their homes the next day. All were enthusiastic over the mountains and were already planning for next year's excursion.

IN TUOLUMNE AND CATHEDRAL CAÑONS.

BY ALEXANDER G. EELLS.

Of the many short trips made from the main camp of the Sierra Club at Tuolumne Meadows this summer, one of the most delightful was that to the White Cascades, affording a glimpse down the Grand Cañon of the Tuolumne. On the morning of July 23d almost all who were in camp at the time started under the leadership of Mr. Muir. Lunch for the party was packed on mules. Professor H. R. Fairclough and the writer, who had from the first planned to go on farther down the cañon, took in addition provisions for themselves for two days. The limit of possible progress for pack-animals was reached about the middle of the forenoon, when it was thought best to stop for lunch. It was still a long way to the top of the Cascades; but the constant and startling change of scene, and the luring of the far-away glimpses, made both space and time seem short. About noon we stood on a ridge opposite the mouth of Conness Creek, looking across through the broken wall of the cañon far off to where Mt. Conness stood up grimly amidst scowling storm-clouds. The roar of the cascade was in our ears. Whilst we stood, trying to master a multitude of feelings and impressions, the storm overtook us. Many sought the shelter of some large trees in the hollow below. A few, under the spell of the magnificent surroundings, remained on the rocks, under the two or three fantastic junipers growing there, while a still more excited few clambered to the top of the cañon

wall above, for the sake of the extended glimpse down into the forbidden region—the real Grand Cañon. This was the end of the trip for the main party.

In spite of the storm (possibly in part because of the fascination of it), Mr. Herbert M. Evans now found the temptation to go on down the cañon irresistible, although he had come unprepared and without provisions. Waving good-by to our friends below and to the shouting cliff-climbers above, we three pushed on alone. It was not far from half-past one o'clock. Descending the declivity which caused the Cascades we came to a little flat with flower-bedecked glades set off by a growth of large red silver firs. But it proved to be swampy; its flowers were heavy with raindrops, and its tangle of brush discharged volleys of liquid missiles upon the invaders. So we took to the cliff. Here, too, we were inhospitably received, and got our first idea of what Mr. Muir had meant by saying that we should have to make our way over piles of granite blocks some of them "as big as the Mills Building." Many were poised in seemingly very unstable equilibrium, and it was wearing on the nerves to walk over or crawl under such. Before the end of the journey, however, we thanked our stars whenever we came to so easy a place as a talus-pile or slide. Some distance beyond the flat was one of a series of the most remarkable ridges of solid polished granite running crosswise of the cañon, like so many stupendous dams seeking to bar the further progress of the river. In fact, they do seem to startle and frighten it out of almost every resemblance to an ordinary river. As Mr. Muir put it, "the river itself does n't know where to go." It is not permitted to hesitate, however. Dashed hither and thither, hurled upon jagged rocks, turned, twisted, churned incessantly, it seems to become frenzied. Not even at Niagara does water look so wild and furious, so beside itself and unnatural. A confused rush of foam-

ing white and flashing green it is from the Cascades to the mouth of Cathedral Creek. We ourselves found it no easy task to cross these ridges. They are glacier-polished, and on the lower side precipitous, as if the great ice-plow had at these places been first pushed upward and then, finding a cleavage-joint, had broken off and shoved out of the way great slabs of the rock as long as the cañon is wide, and extending several hundred feet downward. Cracks and crevices alone save these places from being impassable. Once we came near having a serious accident, owing to inability to find a secure foothold in scrambling on all fours down a glassy slope.

Between these ridges was a tangle of brush, some of it thorny, and nearly all underlaid by a confusion of large rocks. Here progress was desperately slow and toilsome, though not dangerous, except for the probability of stepping on a rattlesnake. An occasional buzz kept us alive to this risk, however. We tried the water's edge, but found no clear margin. The recent rains had helped to melt the snow, and the river was full to the brim. A few weeks later we should in all probability have found, in the clear space between high and low water, an easy escape from many a struggle.

As the sun was passing beyond the cañon's ramparts we came to the top of the California Falls, and stood awe-struck at the turmoil below. On a terrace near the foot of the falls we noticed some large and finely shaped red silver firs, truly worthy of their botanical name "the magnificent." Again, the next morning, we looked up and back at them and tried to estimate their height, but there was nowhere to be seen anything familiar enough to serve as a standard of comparison. It took us almost an hour to reach the rocky terrace spoken of. We decided to camp right on the rock just beyond the spray. The polished granite was at least clean, and not, like everything else,

spongy with water from the afternoon's rain. A level spot, almost surrounded by great blocks of stone, protecting it from the wind, with a large clean hearthstone in front and reflecting walls behind, seemed to promise cozy comfort for the night. These were important considerations in the view of three tired and wet fellows without bedding. From a stocky juniper near by we tore long strips of its dry fibrous bark, which flossed nicely into a soft and deliciously fragrant bed. A large butt log which sputtered with pitch made the backing for a roaring fire. We soon were dry. Our hearthstone was bright. An abundant meal made us cheerful, and for some time after dark the narrow cleft in which we had nestled resounded with college-songs. Our bedroom, notwithstanding its perfect ventilation, was at first uncomfortably warm, and we had to tear our fire apart. It was glorious to breathe the cedar incense, to hear the roar of the river above and beside us, to see the starry dome above buttressed by the massive promontories of the cañon walls. We were soon asleep, however, and at least two of us, who backed up against each other, slept as cozily and as soundly as at any time we had done in our blankets.

There was, however, no difficulty in getting an early start next morning, and by seven we looked over the brink of the Le Conte Falls. (See photograph.) Words fail to express our astonishment. "Look at the steam-engine!" we exclaimed. The water, tormented and writhing incessantly since it had left the White Cascades, seemed now to be panic-stricken, and to tremble on the verge. Then, as if abandoning all its notions of propriety, and forgetful of the laws of its being, it left its bed and whirled through the air, a huge uplifted arc, or wheel. A wide sparkling fringe marked the outer margin of the whirl, and through it silvery rockets burst in all directions, contributing their gems to the lace-work of the fringe. A few moments later, with terrific

energy, it hurled itself, almost at right angles, against the plane face of a great slab of granite that stood out from the face of the declivity and extended transversely across farther than we could see through the mist. This wall was too high to be leaped, even by an insane river. That it should withstand the titanic onslaught of the water, however, seemed marvelous. The concussion sent out a cloud of steam—it was too light to be called spray—with rumbling and hissing noises. The groaning and the thundering of ponderous machinery was also to be heard, and one easily fancied himself in one of nature's great engine-rooms.

On clambering down, we saw that the whole river, full to the brink as it was, broke here as completely as the sea-wave breaks against the solid cliff, and in mad haste was escaping from the scene of disaster, in a course quite at a right angle to its former one. It rushed along the ledge impatiently for several hundred feet until, a short distance from the opposite wall of the cañon, it found an opening through which it bounded, curving sharply back again, and, after a succession of leaps and cataracts, resumed its chosen way close to the south wall of the cañon under which we were. With difficulty we worked our way to its edge where it rounded a bluff, around which we tried to follow it, but found the water too high. It was a tedious and painful scramble over the bluff and a struggle with brush and rocks until we came out at the foot of a long bare, polished granite ridge, curving up to a domelike height, and thence connecting with the divide between us and Cathedral Cañon. Finding the water's edge again impracticable, we made for a sag in the ridge, expecting to cross over. The farther side proved to be a sheer precipice, and we were obliged to make the slippery ascent to the dome. Here we had a magnificent view of the Grand Cañon, both backward and forward. We were greatly impressed with the effect of vastness and distance given by

the comparatively wide space between the precipitous sides of the cañon, and by the long transverse lines introduced by the damlike ledges already spoken of, terracing the cañon on a gigantic scale. Only a Milton or a Dante could even suggest the effect. Its grandeur is of a character quite different and distinct from that of the Yosemite. Recent happenings suggested the pleasant reflection that this cañon at least is inaccessible to the Board of Commissioners, and intolerant of "improvements," and that here Nature has carefully guarded against the intrusion even of the profaning eyes of any who do not love her for her own sake.

The same sheer precipice again confronted us from the farther edge of the dome, and reluctantly we decided to make for a narrow ledge running along the face of the cañon wall ahead, in the hope that it might lead around into Cathedral Cañon. It seemed a desperate chance, but the only alternative was to retrace our steps. At first it led us up and down very abruptly, and unpleasantly close to the edge of the precipice. Presently it widened, but as it did so became matted with storm-beaten brush, which impeded us painfully. After a while we came upon a kind of trail through it, which, though not separating the branches to any great distance above the ground, yet gave us a free footing. From marks on trees near by, we concluded it must be a bear trail, and thereafter proceeded with much ostentation, in order to give the proprietors polite notice of our approach. At last we came out upon another ice-rounded ridge similar to that we had left behind us, and soon had our anxieties as to the outcome set at rest by the sight of a good-sized stream which we knew must be Cathedral Creek. At this point it was making a steep descent down the face of a glacial scoop, in a very curious fashion. It was falling, sometimes ten or fifteen, sometimes thirty or forty feet at a drop, from one to another of a suc-



LOOKING DOWN LECONTE FALLS.
From a photograph by Alexander G. Eells.



BASIN CASCADE.
From a photograph by Alexander G. Eells.

cession of circular or oval basins hollowed out of the solid granite. The whole formed a singular compound fall, each component part of which poured out of and in turn into one of these basins. The point where we stood was about midway between the top and the bottom. With some difficulty we managed to get the accompanying photograph, showing, though with a false perspective, perhaps half of these basins. It is only by noting the good-sized trees on the opposite bank that one gets an adequate idea of the magnitude of the scene. A curious cascade of many fine filaments and thin ribbons of water came straggling down from the high cliff opposite; a bit of the lower part of it can also be seen in the photograph. A bold promontory towered above us on the side where we stood, but we could not get far enough back from it to photograph it with our pocket-camera. Below us the stream seemed to pitch out of the barren granite hollow, presumably over the walls of the Grand Cañon. We fancied it would be impossible to come up from that cañon by way of the creek-bed directly, at least during such high water. Dark clouds had been gathering, and as we sat down to lunch it began to rain. We were soon driven to the shelter of a shelving rock. After a heavy shower, lasting perhaps an hour, we set forth again and thought to cross a sloping ridge, a spur of the mountain above us. Much to our surprise we found here, as elsewhere in this remarkable cañon, the reverse of what had been the case in the Tuolumne, namely, the precipices were on the easterly or up-stream side, though, it is true, the ridges did not run straight across the cañon as before. We had to retrace our steps to the creek. Finding no crossing, we had no choice but to work our way along the foot of the cliff by the aid of the outgrowing brush and trees, in a manner more becoming to monkeys than to men. Every bough we touched discharged its shower-bath upon us. After a long time spent at this, with but very little

progress, desperation drove us into the creek. We plunged in heedless of the consequences and struggled across. The other side was better for a short distance,—until the cañon turned,—but the churning of the water in our shoes and the dragging of our wet garments was not pleasant, to say the least. We had to repeat this performance several times.

The remainder of the afternoon was one long struggle, and an up-hill struggle it was in every sense, against matted, tangled, wet, and slippery brush, the dead portions of which bristled at us like *chevaux-de-frise*. A dead tree-trunk along which to walk was a great relief. A talus-slide was "easy," and the boulder-strewn but otherwise clear bottom of an overflow channel was a positive luxury, even though covered with shallow water. We had long ceased to have any care about such uncertain evils as rattlesnakes.

Just at dusk, after we had struggled to the crest of a long ridge sloping far out across the cañon, we saw at its foot a most welcome open, level space, amidst some tamaracks. As we were looking for the least dangerous way down the perpendicular farther side of the ridge, two startled deer bounded gracefully out of some bushes and swam across a pool in the creek near by. We noticed that the north wall of the cañon was much broken down, and hoped it might be the crossing-place of the old Virginia Trail. At any rate, the cañon looked much more level and practicable as far as could be seen. With renewed energy we slid and swung down the precipice, and, reaching the open, prepared to "camp." There was no singing that night. The ground was damp, almost soggy. The wood we gathered was wet. The rocks we picked up in the darkness failed miserably to do any real service, either as seats or as hearthstones. For supper we had a few pieces of broken hardtack, a remnant of chocolate, and a few raisins. Our provisions, intended for two, had been almost

exhausted during the day. After long-continued efforts to dry our clothes, we sank down on the ground in various more or less uncomfortable positions and dozed. Every half-hour or so afterwards the breeze made us understand that some portion of our clothing was still wet, and we would get up, renew the fire, and try to mitigate that source of discomfort. Next morning, as soon as it was light enough to see, we ate all that we had left, to wit, a handful of malted milk tablets. It was as hard to get ourselves in motion as to start up a rusty lawn-mower. Fortunately, we found the way much more open. The talus-piles were clean, respectable blocks of granite. The brush was no longer dripping. Although it was a long time before we found any signs of a trail, there was comparatively so little difficulty that we soon warmed up to our task, almost cheerfully. We found a refreshing soda spring, and inscriptions on the trees near by. Soon afterwards we came within sight of Fairview Dome and Round Mountain. Another little spurt brought us to the Tioga Road, where we swung into a good road gait which brought us, about 11, to the camp at the Meadows. A full meal, an hour's sleep, and a plunge into the river brought us all back into the condition in which we could declare that it was a trip we wouldn't have missed for the world.

We agree, with emphasis, that the afternoon's agony in the lower part of Cathedral Cañon was by far the worst part of the entire trip, and that none of us care to repeat it. Perhaps, however, at low water a comparatively easy way along the margin of the watercourse might be picked out.

We all declared our intention to make the trip throughout the whole length of the Tuolumne Cañon at the earliest opportunity, and to make it on the south side if possible. If the precipice near the mouth of Cathedral Creek should prove an insuperable obstacle, a large tree which we saw

across the river just above it will, no doubt, afford a crossing for several years to come.

At least one woman has made the trip, though on the opposite or north side of the cañon; and for the benefit of any whom the spirit may move to make the attempt hereafter, we suggest, in closing, that a man's attire is indispensable to success. Any sort of skirt would make the struggle through the brush simply hopeless.

THE GREAT SPRUCE FOREST AND THE HERMIT THRUSH.

BY VERNON L. KELLOGG.

The Great Spruce Forest is characterized chiefly by its very many trees and its dreadful stillness. As we reluctantly poked our heads from beneath the covering blankets and peered about through the heavy gray of a June dawning, the ghostly trees and the absolute silence struck first into mind. A June morning at ten thousand feet above old ocean's bosom is quite another thing from the breaking of day in summer's first month hereabouts.

It is cold on the mountain-side. The Great Spruce Forest lies high up on the eastern flank of a mighty mountain range, and covers a great many acres of tipped-up ground. Just how many, perhaps no one can truly say, but each acre is the type of all; completely usurped by towering straight spruce-trees bearing regular whorls of downward-projecting branches, each branch formidably armed with keenest bluish-green needles. I tried climbing one of these trees once to get at a tempting jay's nest fifty feet up, but was well-nigh transfixed on the first *chevaux-de-frise* reached. The silent spruces were as thickly crowded as they could grow, and held far aloft, stretching over their sharp tips, an intensely blue sky. When one in the Great Spruce Forest looks in front or behind, or to right or to left, he sees only the rigid gummy trunks firmly set in the moss-covered ground and among them, pushing away in all directions, the dim darkling forest aisles. If one looks up he sees high aloft, as from the bottom of a well, a small

patch of blue. A long way up is it to the blue, and rank after rank of the downward-pointing spears assure one of extreme difficulty in the getting up.

Just where in the Great Forest we shiveringly inspired the fresh atmosphere that June morning, a small group, perhaps half a dozen, of spruces had succumbed to some great wind and their fallen shafts were slowly returning to the soil the rich stores they had formerly taken from it. A tiny pool of clear, cold water with a half-invisible rivulet seeping away through the dense green mat, quickened the plant life for some little space around. Bright yellow splashes of buttercups and trembling wind-flowers reared their dainty white faces from among the cool green leaves; near a half-imbedded stone dashed with soft shades of color by the abundance of some microscopic plant form, a handful of odd-faced columbines, half-white, half-purpling, bent languidly toward us. At our feet a tenuous line of smoke drifted uncertainly upward, and the white ash covered the still live embers of our evening's camp-fire. A couple of tin plates and cups rested on a log, and on a pile of spruce limbs from which had been furnished the fuel for the camp-fire, lay a greasy "burlap" in which was confusedly confounded the food for the now wakening sleepers. A burro's pack-saddle, with ill-smelling straps and cinches, rested in close proximity to the "grub-sack," and a rod or two distant, meditatively munching a bit of decayed spruce log, stood the meek and impassive Billy himself, hero of many a ludicrous adventure, and venerable as the ancient rocks above us. Two unsophisticated-in-mountain-camping youths were we who had spent a rather disagreeable night. We had trudged toilsomely more than half the day before, begging, pounding, cursing Billy-the-Burro for a dozen miles up from the Big Thompson cascades in the mountain valley below to hunt for deer in the Great Spruce Forest. When fairly in the forest, and the narrow aisles between the rows

of spruce were growing short because of the spreading darkness, a mountain lion had slipped across the trail not more than half a hundred yards in front of us, and had carelessly let slip from its mouth one of those horrible cries for which it is unpleasantly but deservedly notorious. We had not come up in search of stray mountain lions, and the wakeful hours of the long night were haunted and made distressful by more or less well-defined suspicions of the brute's presence about camp. A stumble of Billy's over a down trunk during the night liked to have made gibbering imbeciles of us both. A mountain lion is a most unhandy victim for the tyro sportsman, he (the lion) having notions of his own about self-defense, and possessing a hideous complement of weapons with which to put these notions into practical execution. The mountain lion is reputed by naturalists, too, to be little put out by darkness, being a regular owl when it comes to keeping late hours. We had not bargained when we set out to be deer-hunters for hand-to-hand conflicts in the dark with cougars, and the final coming of the long-delayed dawn lifted no slight load from our bold hunters' hearts.

With all the charm of the camp surroundings, the almost intolerable silence tended to create a feeling akin to depression, and our weak attempts at jest over the night's unrest were so foreign to the spirit of the morning that they died on our lips. There was needed the voice of the Great Forest, the utterings of the wood-spirits. And as we lay with straining ears and tense nerves, of a sudden the voice came. High over head and down the trail half a dozen rods burst forth a single lyric measure, the notes rolling, trilling, gurgling, and clear and strong as befits the voice of a great forest's spirit. The short carol was repeated, and again. The last liquid *tur-kwill-ah-illah-ee* was barely dying away when from far away in the direction of the silent green lake which one may seek for a day and

never find, came faintly the answering voice, trilling back the same joyous strain, and more faintly still, floating up the mountain from far below, where the tumbling rill makes soft music all the day, came, half unheard, the song's sweet repetition. 'T was the matins of the hermit thrush, rare minstrel of the mountain forests. Garbed in soft brown friar's frock, a monk well content to worship lone at Nature's shrine! Naturalists have told and poets sung of the hermit's wonderful song. It is in truth a marvelous measure, containing all those characteristics of liquidity and bell-tone which make the thrush-song the highest expression of bird-music. But it is largely the always-enhancing circumstances which give it special credit above other thrush carols, although it has its own peculiar and indescribable special characteristics. Haunting the dense woods of the whole North American continent the hermit thrush is yet rarely heard, and worse, if heard, more rarely recognized. . . . As the last echoing *ki-will-ah-ee*, like the tinkling of small bells, died away and a flush of light stole visibly down the long lanes, F——n lifted his dripping head from the pool and grunted expressively, "This is a mighty religious sort of place, up here."

FROM REDDING TO THE SNOW-CLAD PEAKS
OF TRINITY COUNTY;*

ALSO,

LIST OF TREES AND SHRUBS SEEN EN ROUTE.†

BY ALICE EASTWOOD.

In August, 1899, Dr. C. Hart Merriam, Chief of the United States Biological Survey, and his assistant, Mr. Vernon Bailey, made a scientific exploration of these little-known mountains which form part of the northern boundary of Trinity County and from which the chief branches of Trinity River take their rise. These scientists reported unusual physical features, wildness and grandeur of scenery undreamed of, and, besides, brought back a small but very interesting collection of plants from the summits of the ridges; so that it seemed as if life would lose its zest if these mountains could not be reached, their rugged peaks climbed, their botanical treasures collected, and their dangers and difficulties overcome. Our party consisted of Mr. S. L. Berry, Mr. Carlos T. Hittell, Dr. Kaspar Pischel, and the author.

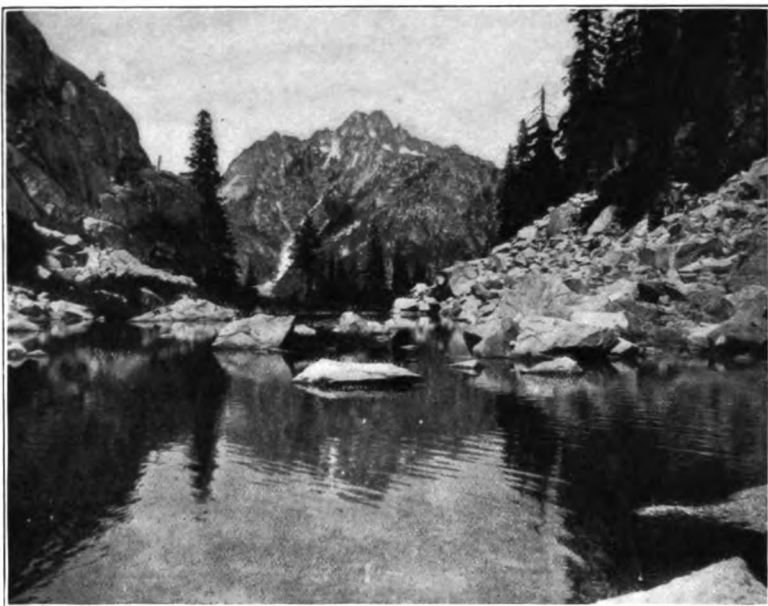
Neither mules nor burros were to be had in Redding and we were compelled to take horses. The horses that we obtained at the stable of Vannah & Saunders were so poor as to be a disgrace even to the pack-horse tribe. They were on their last legs and gave us great trouble and delay, almost causing the complete failure of the trip.

We left Redding about ten o'clock the morning of July 2d, leading our extremely quiet beasts, planning where we

* See page 66 for Route and Camps. † See page 53 for List of Trees and Shrubs.

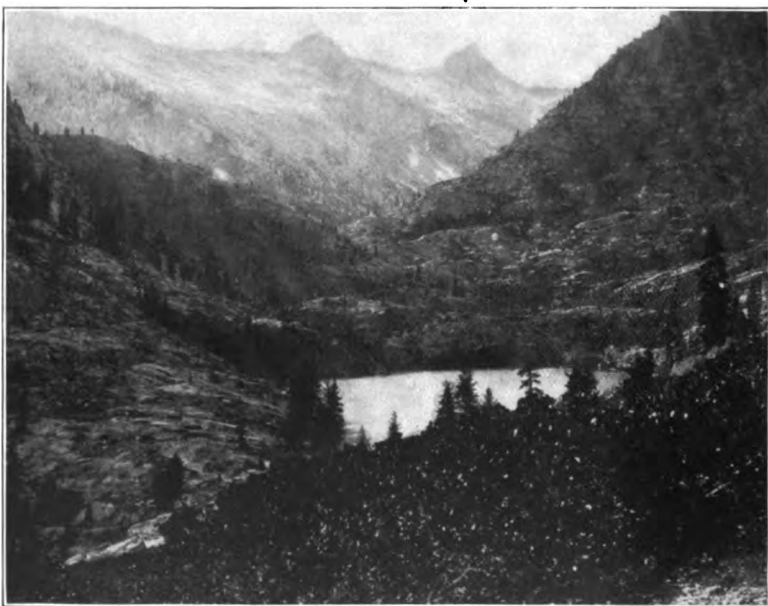
would be by night, and indulging in dreams of at least twenty miles a day.

The first day out we passed through a rolling country where occasional small streams crossed the road, some of them containing a little water, but most of them dry. The road was very dusty, as is usual at this time of the year; but the oldest inhabitant never remembered to have seen the dust so bad as this year. This was caused by the increased freighting which the development of the Sweepstake Mine is inducing. It was the country of the digger pine (*Pinus Sabiniana*), which found no breeze in which to wave its gray-green plumes. The pale gray manzanita (*Arctostaphylos viscida*) everywhere prevailed, forming great bushes almost treelike. Along the stream-banks and in the beds of dry streams the button-willow (*Cephalanthus occidentalis*) was in full bloom and refreshed the eye with its bright green foliage and its globular heads of whitish flowers, while its fragrance perfumed the air as we passed some distance away. Now and then a bush of redbud (*Cercis occidentalis*) was seen, with its clean, round, green leaves and its purple pods. *Quercus Wislizeni* is the live-oak of the region. It forms round, compact trees with holly-like leaves. There were besides, the blue oak (*Q. Douglasi*) and the black oak (*Q. Californica*). *Ceanothus integerrimus* and *C. cuneatus* were the most common species of Californian lilac, the former having loosely-flowered panicles of white or pale blue flowers, and bright green alternate leaves, the latter with rigid opposite branches, small gray-green wedge-shaped leaves, and small compact clusters of white flowers all over the stems when in bloom in the spring. Poison-oak climbed over the bushes or grew in clumps and was already beginning to turn red. *Rhamnus Californica* (the coffee-berry) was common and gave promise of much fruit. Everywhere the wild grape hung in graceful festoons over the trees or



SUNSET PEAK FROM UPPER LAKE IN WESTERN AMPHITHEATER.
From a photograph by Carlos T. Hittell.

Thompson's Peak ↓



THOMPSON'S PEAK AND LOWER TWIN LAKE.
From a photograph by Carlos T. Hittell.

clothed fences. Occasionally *Clematis ligusticifolia* climbed over the bushes, and was seen either in full bloom with its panicles of starlike, white flowers, or with the globular heads of seeds beginning to be plumose. Poplars and alders grew along the streams.

As we approached Shasta, an old mining town, *Pinus attenuata* and *P. ponderosa* began to appear, and in some places the valley oak (*Quercus lobata*) was noted, though not so common nor so fine as in localities where the soil is richer and more moist. Between Shasta and Whiskeytown *Cupressus Macnabiana* was found, perhaps the locality where this cypress was first discovered. As we climbed the hill separating these two places, once the scenes of great activity, wild revelry, and wasted lives, now dead and deserted, new trees and shrubs were seen, the big-leaved maple of the Pacific Coast (*Acer macrophyllum*), the buck-eye (*Æsculus Californica*), the wild cherry (*Cerasus demissa*), the wild plum (*Prunus subcordata*), the sweet shrub (*Calycanthus occidentalis*), *Styrax Californica*, the mock orange (*Philadelphus Gordonianus*), several species of dogwood, all so covered with dust as to be scarcely recognizable. From the top of this hill a fine view of the whole country can be seen, the Sacramento Valley lying to the east, the mountains to which we were traveling to the northwest, while to the northeast Mt. Shasta loomed up grand and solitary, twice as high as any other mountain.

It was about six in the evening when we reached Whiskeytown. As we could buy food for the horses at the stable and there was a fine spring near the bridge and a level place adjacent, we decided to make this our first night's camp.

The next day was hot and the road very dusty. We passed several freighting-wagons, canvas-covered and drawn by from four to ten animals. The most beautiful place on the road is the well-known Tower House, a haven of rest, coolness, and shade. Great trees spread their branches over

the road, which is kept free from dust by the frequent use of the hose. Long ago *Melia Azedarach* was planted through this country as a shade-tree, and has become thoroughly naturalized. Young trees were seen everywhere as we traveled along the road.

We had heard of a trail not far from here that led to Lewiston, and we longed to reach it, so as to be out of the horrible dust. It was on this trail, by the side of a stream of good water, that we made our noon camp. It was a beautiful place, full of trees, beneath which the white flowers of the *Philadelphus* gleamed in their purity; the tropical-looking *Aralia* grew luxuriantly in wet places, but was not yet in bloom; the buckeye and redbud, the maples and oaks abounded through the little valleys and on the adjacent hills. Tiger-lilies bordered the streams in places, and the bright scarlet California pink peeped from under the shrubs. The trail led to the summit of a high hill from which Mt. Shasta was again visible.

It was here that "Tom" gave out and seemed to be scarcely able to walk; so we decided to camp where we first found water and see whether it would be possible to obtain another horse at Lewiston, which was distant about five miles.

After much trouble, many discouragements, and a delay of a day and a half, a young mare was obtained from Mr. William Hampton, of Lewiston, and we left the old horse in a pasture until our return. This mare proved to be a valuable animal, sure-footed, accustomed to keeping free from the rope when tied, and determined to neglect no opportunity to graze either on the trail or in the pasture.

Dr. Pischel, whom we expected to meet at Weaverville, was intercepted at Lewiston, and came to our camp in the cañon instead of going on.

This cañon was one of the loveliest places and the most interesting to a botanist of any that we passed on the way

to Cañon Creek. Here *Philadelphus* was glorious, the vine-maple (*Acer circinatum*) was common; one tree of the chestnut-oak (*Quercus densiflora*) was noted, the only one seen on the trip; the rare *Ribes Lobbii* was seen for the first time; *Cornus sessilis* was in fruit, and the most beautiful of all the honeysuckles of California (*Lonicera ciliosa*) held out its flame-colored flowers over the bushes like a torch to illumine the darkness of the cañon in the shade of evening, when it was first seen, a surprise and a never-to-be-forgotten delight. The California yew (*Taxus brevifolia*), the incense cedar (*Libocedrus decurrens*), the fir (*Abies concolor*), the yellow pine (*Pinus ponderosa*), the sugar pine (*P. Lambertiana*), were all there, while the Douglas spruce (*Pseudotsuga mucronata*) reached a fine development and fruited most abundantly. Madroños and alders, maples and oaks prevailed amid these other trees.

It was on the afternoon of July 5th that we reached Lewiston, a small farming town on the Trinity River. From there we went by trail to the summit of a hill separating Lewiston from Weaverville, and camped at a beautiful upland meadow known as Packer's Camp. It was about sunset when we arrived, and Mt. Shasta was in the glow of the setting sun. Wherever this mountain appeared, it rose like a giant over the other mountains which were to be seen on every side. Here again we met beautiful sugar pines. The generally prevalent black oak was replaced by *Quercus Garryana*. This upland meadow was like a park, the rolling surface, "tanned by summer's breath," formed a fine background for the beautiful oaks and the picturesque pines. From the western summit we saw distinctly for the first time the mountains for which we were aiming; but it was not until we had learned their outlines by intimate acquaintance that we knew them to be the same.

At last, about 10 on the morning of July 6th, we reached Weaverville, a day and a half after the expected time. This

is the county seat of Trinity County and one of the few towns of '49 which is still flourishing. Before noon we climbed the hill which separates the town from the La Grange Mine. It was hot and dusty beyond any place that we had passed, for we were approaching the goal of all the freighting-wagons. When we at last reached water we were too tired, hot, and thirsty to eat, and made but few preparations for lunch. In the afternoon we passed the great La Grange Mine, where the hydraulic giants were washing away the mountains and filling the river-bed below with an artificial moraine of rocks and débris. It is desolation and ruination of the natural features of the country, and the result on the landscape is typical of the effect on humanity of the greed for gold.

Late in the evening we reached Anderson's ranch, the first place near Junction City where we could obtain pasture for our horses, wood, water, and a place to camp. About eight the next morning we passed Junction City and another big placer mine, owned by a French company. We were now on Cañon Creek, the stream which we were to explore to its source. From the first it was most interesting and beautiful. In one place it had worn a labyrinthine course through the solid rock, in other places it was bounded by clifflike walls, while the banks opposite were bordered with fresh green trees and shrubs, untainted by the dust of the road. Here I saw the only bush of azalea that was noted on the entire trip. Blackberries and black raspberries were quite common, and were ripening. We often stopped to eat the fruit. It was along this road that we came across several colonies of Chinese engaged in placer mining with all the modern methods—hydraulic giants, pipes, and flumes. Now and again we walked through old placer washouts where the trees had begun to reassert their sway. Occasionally we passed a lonely cabin in which some old miner lived. These men seemed like the

driftwood of humanity left behind on the great tide that swept over the country in the days of '49. They were chatty and liked to talk of olden times. There seemed to be traces of deserted ranches everywhere, represented by fruit-trees uncared for, but usually having a small crop of apples or peaches.

At last, about 6 in the evening, we reached the small town of Dedrick. This was the terminus of civilization, and the next day would find us in the unknown country which we had come so far to see.

We were told of a place up the cañon where we could get pasture for our horses, but were misdirected and went about a mile up the steep grade to the Chloride Mine before finding our mistake. It was late when we reached the camp, tired and hungry, and with the horses ready for a better feed than the scanty pasture promised.

Very little seemed to be known of the trail or the cañon by the people whom we asked. They told us that we would have difficulty in fording the creek, that the fords were many and, at this time of the year, dangerous, and that the trail would be hard to find, on account of being overgrown with brush and obstructed by fallen trees.

The next morning, however, we started early with brave hearts but with many misgivings. One or more generally went ahead to explore while the others stayed behind with the animals, and we all took turns at leading the beasts. There were altogether seven fords from Dedrick to the upper lake. Every one was a horror to me; but the men roped the animals over without any accidents, and at all except one we found logs on which to cross. One log was especially shaky and dangerous. It was high above the water, which formed a pool twenty feet deep below.

All through this beautiful cañon, rare and lovely flowers grew. Five species of the dainty *Pyrola*, two species of *Campanula*, the rare ghost-orchid, *Cephalanthera*, *Chima-*

phila, *Vancouveria*, all flourished in the shade of the forest. *Clintonia uniflora* carpeted the ground in shady places where the hot sun could not wilt its pure white, starlike flowers. The rare *Lewisia cotyledon* was seen for the first time near one of the fords, strikingly beautiful, bearing panicles of bright pink flowers.

The first falls are the best known, as few people go any higher. This fall we christened "Hound's-Head Fall" from a rock shaped like a hound's head, which jutted out on one side as if looking into the cataract. From there on, the creek was a succession of most lovely cataracts, any of them more beautiful than the falls near the forks of Bubbs' Creek in the King's River country.

We were two days in reaching Twin Lakes, a distance of nine miles. We had to cut trails through the brush; for we completely lost the trail in one place, having been led astray by some predecessor. It was a wild country that we were approaching—granite peaks clothed with snow, but with trees even to their summits, lakes of great beauty, and creeks and waterfalls everywhere. Here we saw for the first time the weeping spruce (see photograph), one of the rarest trees in California, though more common in Oregon. It is a singular-looking tree, and would attract attention anywhere. The tree is pyramidal in general outline, but rarely symmetrical: it is branched from the base with horizontal branches. From these branches the branchlets hang like long thick fringe from one to several feet in length. The tree has the appearance of being draped or veiled with these slender branchlets. The cones hang from the upper branches, and the old ones persist after having discharged their seeds.

From Redding to Twin Lakes we had passed three zones of trees, the first represented by the digger pine (*Pinus Sabiniana*), the second by the sugar pine (*Pinus Lambertiana*), and the third by the mountain pine (*Pinus*

monticola). The gray-green manzanita (*Arctostaphylos viscida*), which had prevailed where the digger pine grew, overlapped into the zone of the sugar pine. In this zone, *Arctostaphylos patula*, the manzanita with smooth, bright green foliage and large berries, was the common species. This also overlapped into the zone of the mountain pine, but was uncommon, being replaced by the low manzanita which clings to the rocks or spreads like a mat over the ground, known as *Arctostaphylos Nevadensis*. In the upper regions this manzanita was in flower, gemmed with the clusters of pearl-like, pure white flowers. The yellow pine reached the zone of the mountain pine, but Douglas spruce had been left some distance behind down the cañon. A few storm-beaten and most picturesque trees of *Libocedrus decurrens* were seen all along the trail from Dedrick to the lakes. Fine specimens of hemlock-spruce (*Tsuga Mertensiana*) grew on the banks of the lakes and high up on the mountains to the summits of the ridges. In the neighborhood of the lakes the red fir (*Abies magnifica Shastensis*) (see photograph) was common.

Beautiful shrubs grew all around. *Bryanthus empetri-formis* formed mats of mountain heather laden with deep rose-colored bells. *Leucothæ* and *Ledum* flourished in the swamps together with the mountain ash, the wild cherry, the meadow-sweet, the small-flowered bush-honeysuckle (*Lonicera conjugialis*), and all were in full bloom. The most abundant shrub seemed to be *Ceanothus velutinus*. This formed the most disagreeable brush to penetrate where there were no trails; for it grew so tall and so rank and with such unyielding stems. The fragrance of its foliage added to that of its flowers made it attractive in spite of being so great an obstacle to our progress. The mountain maple (*Acer glabrum*) grew along the lakes, and what seems to be a new species of fringe-bush, or *Garrya*, was common. The low-spreading oak (*Quercus vaccinifolia*)

clothed the rocks of the talus almost to the summit of the ridges; more often it helped instead of hindering our progress. A peculiar shrubby yew was also abundant in places, forming dense thickets. From the time that we left the last madroño, near the foot of Hound's-Head Fall, we had gone from a flora very similar to that of the coast under the redwoods and had reached one subalpine in character, within a distance of less than nine miles.

We passed great slopes of granite polished by glacial action to almost the degree that granite is polished for monuments or buildings. Glacial scratchings were everywhere and big rounded boulders frequent. Piles of talus almost covered by brush seemed to prevail on the eastern side of the cañon; but in the main amphitheater, the smooth granite covered great areas. Higher up the granite became sharper in the outline of the boulders and cliffs. There was an awfulness about the summits that was forbidding. The ridge was a succession of pinnacles and cliffs—a regular Sierra. Not one of the peaks was easy climbing at the top.

Our camp lay about a quarter of a mile below the lowest lake, a short distance from the trail and not far from a small stream of ice-cold water which came from the snow-banks of the mountain on the east. It was in the open, on the rocks. We camped here because in the meadow below there was good feed for the horses. We were dry and much warmer at night on these rocks and almost free from the mosquitoes and other insects which were a pest in the wet meadow below. To be sure, we had no shade, but we did not expect to be in the camp by day, and at night it made no difference. Every evening we watched the rays of the sun leave one peak after another, and that on which they rested longest we named Sunset Peak. From behind the next peak to the south the planet Jupiter rose after sunset and made a beautiful picture in the evening sky; so we named this mountain Mt. Jupiter. The sky was wonder-

fully clear, and all the summer constellations shone out with great distinctness; the Milky Way and the Scorpion on one side, the Great Bear and Perseus on the other, while Vega and Corona were in the zenith above.

The birds were numerous and very musical. Never have I heard so many songs as greeted us every morning about the break of day. We saw linnets, thrushes, and water-ouzels. I heard one of the last chirping gayly as he danced in and out of a cataract where he was looking for insects. Small game seemed to be scarce. We saw a few grouse—scared up one mother bird on a nest of five eggs.

The first expedition was to attempt the ascent of Thompson's Peak (see photograph), the highest mountain of the group. The ridge was ascended on the western side of the upper lake to the summit. It was very steep and rough; in some places great tracts of snow had to be crossed, and when the summit of the ridge was reached, the succession of cliffs, pinnacles, and knife-edges that intervened between the point to which we had ascended and the peak which seemed the highest showed that it was too late in the day to begin to make an attempt to reach it, even if it were at all possible from that side.

The peak which we climbed to the summit was that which we had named Sunset Peak (see photograph). We started from our camp at its foot and made the ascent along the course of the stream and the snow-banks. Every step was an upward one, but not dangerous, though to look back upon the course by which we had come made one dizzy with its precipitous slope. We kept out of the snow as much as possible, climbing over the talus whenever we could. Beautiful flowers bloomed where the snow had melted a few days before. Beds of crimson *Bryanthus*, clumps of *Anemone occidentalis*, with large flowers as white as the snow which had so recently covered them, *Saxifraga*, *Arnica*, *Caltha*, *Trifolium*, *Aster*, *Erigeron*, *Potentilla*, *Aquilegia*

Pentstemon, *Mimulus*, *Tofieldia*, and *Hastingsia*. On the summit of the ridge we found *Cassiope* in full bloom, a yellow-flowered *Draba*, a beautiful *Pentstemon*, and even up here the hardy hemlock-spruce had climbed, one little tree being found laden with purple cones.

From the summit of the ridge to the summit of the peak the ascent was made over great blocks of granite, but none so high as to be climbed with any difficulty. Mr. Hittell was ahead, and had climbed a cliff from which he could not descend. How he had managed to get up with his camera on his back was a mystery. Mr. Berry and I used a rope to make the ascent to the top of the rock on which Mr. Hittell sat, and from there to the summit it was easy work. The most beautiful view of Mt. Shasta was had on the way up this cliff. To see this mountain at its best it must not be seen from too near, for its immensity does not impress one on account of the absence of anything with which to compare it. It must not be seen from too far, as I saw it once from the top of Mt. St. Helena, for its outlines are too dim; but from the distance and elevation of these mountains, its great size and its grandeur as a mountain can never be forgotten.

From the top of this peak we had a chance to see the country near at hand and decide what parts to explore before we had to return. On all sides were amphitheaters at the foot of rugged granite peaks similar to that on which we stood. Great snow-covered slopes spread between these crests and lost themselves in green meadows and dashing torrents. We rolled some rocks down on to one of these snow-banks and started an avalanche. We could hear the swish of the snow a thousand feet below and looked down upon this torrent of snow as it sped swiftly along, with the snow on each side as unmoved as the rocky banks of a river. The peak which rose beside the one on which we stood seemed to be the higher, but we had no instru-



WEeping SPRUCE—*Picea Breweriana*.

CANON OF CANON CREEK

From a photograph by S. L. Berry.



SHASTA FIR—*Abies magnifica Shastensis*.

RIDGE WEST OF THE MAIN AMPHITHEATER ABOVE THE LAKE.

From a photograph by S. L. Berry.

ments by which we could tell and had no time to make the ascent; so we took a picture of it to show the general character of these rocky summits. Mr. Berry went down the way that we had come up, jumping from the cliff to a snow-bank below. Mr. Hittell and I returned by the other side, and soon found that it was not so easy as it promised. After about an hour of careful work and the almost constant use of the rope, we managed to reach a place where the descent was easy.

Our next expedition was to the foot of Thompson's Peak, or what we took to be that mountain. This is a cone-shaped peak, apparently difficult to climb, and would have taken two days from our camp. We did not have the time, and gave it up. There was no trail above the upper lake, and we had to make our way through the brush. We kept up, but found on the return that it would have been easier to have skirted the eastern edge of the lake as closely as possible. On the western side the rocky cliffs come down to the water, and it is not possible to go on that side without climbing half-way up the mountain. The water in the streams above the second lake was the purest that I have ever seen. It flowed over granite that was almost as white as snow, and every pebble could be counted at the bottom of pools and streams. Here the willows were beginning to bloom, the *Kalmia* still held its pink flowers, and *Dicentra uniflora* had not disappeared.

The day after, we devoted to the exploration of the western amphitheater which we had seen from Sunset Peak. We found this full of little lakes on two benches. The lower bench held a cluster of four or five, more or less in a chain; the upper a pair of twin lakes almost surrounded by snow-banks. We stood under one snow-bank more than ten feet high.

It was on the way up here that we saw a bear. Mr. Hittell was ahead sketching; I was in the rear. Mr. Berry

called to me to come quickly. On the opposite side of the stream which came from the lower chain of lakes, walking along a bench of rock on the side of the cliff, was a big cinnamon bear, not fifty yards away. He looked at us undisturbed and we looked at him. We tried to call to Mr. Hittell, but he was too far ahead; the sound of the cataracts deadened our voices, and he did not understand our signs. Mr. Berry had only a 38-caliber Smith & Wesson, but he shot at the beast and really hit him, for the bear shook his head and his paws and trotted on. The sting of a small bullet at the distance was probably no more than the sting of an insect. Again Mr. Berry shot, and this time the bear became really scared, turned, and ran off as fast as he could in the direction whence he had come. Mr. Hittell's chagrin was great when he learned what a chance he had missed.

The next day, July 15th, we began the return trip. We had no difficulty in finding the trail or in getting over the fords, and in consequence were only a day in returning to Dedrick. From there on, the journey was without incident. Near Lewiston we gave up the mare with regret and again took Tom, apparently as stiff and lame as when we left him in the pasture two weeks before. We were two days and a half in reaching Redding, but rejoiced that we got him there alive.

The easiest and quickest way to reach these mountains is by stage to Dedrick. The journey takes two days from Redding. We were uncertain about getting pack-animals at Dedrick, therefore we packed from Redding and walked.

TREES AND SHRUBS SEEN EN ROUTE.*

(ARRANGED IN THE ORDER OF THE FAMILIES.)

TAXACEÆ.

Taxus brevifolia, Nutt., YEW. Lewiston Trail.

TAXUS. An unknown shrubby species; perhaps only a variety of the preceding species. Found around the lakes.

CONIFERÆ.

Pinus Lambertiana, Dougl., SUGAR PINE. Divide between Tower House and Lewiston; between Lewiston and up Cañon Creek, but not to the lakes.

Pinus monticola, Dougl., MOUNTAIN PINE. The common species around the lakes.

Pinus ponderosa, Dougl., YELLOW PINE. Common from near Shasta to the lower lake.

Pinus Sabiniana, Dougl., DIGGER PINE. Common around Redding to beyond Whiskeytown.

Pinus attenuata, Lemmon, KNOB-CONE PINE. Near Shasta and Whiskeytown.

Picea Breweriana, Wats., WEeping SPRUCE. (See photograph.) From Hound's-Head Falls to the lakes.

Pseudotsuga mucronata, Sudw., DOUGLAS SPRUCE. Lewiston Trail, Cañon Creek.

Tsuga Mertensiana (Bong), Carr, HEMLOCK SPRUCE. Around the lakes and up the mountains adjacent.

Abies magnifica Shastensis, Lemmon, SHASTA FIR. (See photograph.) Around the lakes.

Abies concolor, Parry, WHITE FIR. Lewiston Trail.

Libocedrus decurrens, Torr., INCENSE CEDAR. Lewiston Trail, Cañon Creek.

Cupressus Macnabiana, Murray, GRAY CYPRESS. Between Shasta and Whiskeytown.

SALICACEÆ.

Populus Fremonti, Wats., COTTONWOOD. Between Whiskeytown and Redding.

Populus trichocarpa, T. & G., BALSAM COTTONWOOD. Lewiston Trail.

Populus tremuloides, Michx., ASPEN. Twin Lakes and in the meadows below.

* See page 39 for account of trip.

Salix, WILLOW. Several species not yet determined. They were not in good condition except near the lakes.

BETULACEÆ.

Alnus Oregana, Nutt., ALDER. Along streams at the lower elevations.

Alnus tenuifolia, Nutt. At the upper parts of Cañon Creek; blooming after the melting of the snow.

CUPULIFERÆ.

Corylus Californica, Rose, HAZEL. Lewiston Trail, Cañon Creek.

Castanopsis 'chrysophylla A: DC., CHINQUAPIN. Cañon Creek. Two forms of this were seen, one approaching *C. semper-virens* Dudley.

Quercus Breweri, Engelm., BREWER'S OAK. Cañon Creek.

Quercus Californica, Cooper, BLACK OAK. Common everywhere except at the highest elevations.

Quercus chrysolepis, Lieb., GOLDEN-SCALE OAK. Along streams everywhere below the higher elevations.

Quercus vaccinifolia, Kellogg, CREEPING OAK. Around the lakes and up to the summits of the ridges.

Quercus densiflora, H. & A., CHESTNUT OAK. Lewiston Trail.

Quercus Garryana, Dougl., GARRY'S OAK. Packer's Camp.

Quercus lobata, Nee, VALLEY OAK. Near Whiskeytown.

Quercus Douglasii, H. & A., BLUE OAK. Redding to beyond Shasta.

Quercus Wislizeni, A. DC., LIVE OAK. Redding to beyond Whiskeytown.

ARISTOLOCHIACEÆ.

Aristolochia Californica, Torr., DUTCHMAN'S PIPE-VINE. Tower House and near Shasta.

RANUNCULACEÆ.

Clematis ligusticifolia, Nutt., MAIDEN'S BOWER. Here and there along the road from near Redding to the Lewiston Trail.

BERBERIDACEÆ.

Berberis nervosa, Pursh., BARBERRY. Lewiston Trail, Cañon Creek.

Berberis pumila, Greene. Lewiston Road. Specimens were not collected.

CALYCANTHACEÆ.

Calycanthus occidentalis, H. & A., SWEET SHRUB. Lewiston Trail; also in other places.

SAXIFRAGACEÆ.

Philadelphus Gordonianus, Lindl., MOCK ORANGE, SYRINGA. Lewiston Trail. In many places along the road.

Philadelphus Californica, Benth. Cañon Creek.

Ribes Lobbii, Gray. Lewiston Trail, Cañon Creek.

Ribes amictum, Greene. Lewiston Trail, Cañon Creek.

Ribes divaricatum, Dougl., WILD GOOSEBERRY. Lewiston Trail.

Ribes. WILD CURRANT. Near the lakes. This is probably a new species near *R. sanguineum* Puroh.

ROSACEÆ.

Nedlha opulifolia, VINE-BARK, BRIDAL-WREATH. Lewiston Trail, Cañon Creek.

Spiræa Douglasii, Hook., HARDHACK. Lewiston.

Spiræa. Another form of what is perhaps the preceding species grew in Cañon Creek near the lakes, but it was scarcely in bloom when we left.

Holodiscus discolor, Maxim, MEADOWSWEET. Cañon Creek.

Cratægus sp., HAWTHORN. Lewiston Trail; apparently two species.

Sorbus occidentalis, Greene, ROWAN, MOUNTAIN ASH. Cañon Creek and Twin Lakes.

Heteromeles arbutifolia, Roem., TOYON, CHRISTMAS-BERRY. Along the road from Redding to Whiskeytown.

Amelanchier alnifolia, Nutt., SERVICE-BERRY. Especially common in Cañon Creek, and forming part of the brush around the lakes.

Rubus leucodermis, Dougl., BLACK RASPBERRY. Lewiston Trail, Cañon Creek.

Rubus parviflorus, Nutt., THIMBLEBERRY. Lewiston Trail, Cañon Creek.

Rubus vitifolius, C. & S., BLACKBERRY. Everywhere except at higher elevations.

Cercocarpus parviflorus, Nutt., MOUNTAIN MAHOGANY. In many places along the road.

Adenostoma fasciculatum, H. & A., CHEMISAL. Rarely observed along the road.

Rosa gymnocarpa, Nutt., WOOD ROSE. Cañon Creek, Lewiston Trail.

Rosa sp. Cañon Creek.

Prunus demissa, Walp., CHOK-CHERRY. Cañon Creek, Lewiston Trail.

Prunus subcordata, Benth., WILD PLUM. Between Shasta and Whiskeytown and in other places.

Prunus emarginata, Walp., WILD CHERRY. Especially common around the lakes.

LEGUMINOSÆ.

Cercis occidentalis, Torr., REDBUD. Common along the roads and trails except in the upper elevations.

RUTACEÆ.

Ptelea Baldwinii parvifolia, A. Gray, HOP-TREE. Near Redding along the road.

MELIACEÆ.

Melia Azederach, L., TREE OF HEAVEN. Introduced everywhere in the vicinity of settlements.

ANACARDIACEÆ

Rhus trilobata, Nutt., SQUAW-BUSH. Lewiston Trail.

Rhus diversiloba, T. & G., POISON-OAK. Common everywhere below the higher elevations.

CELASTRACEÆ.

Pachystima Myrsinites, Raf., MOUNTAIN MYRTLE. Cañon Creek.

ACERACEÆ.

Acer circinatum, Pursh., VINE-MAPLE. Lewiston Trail.

Acer glabrum, Torr., MOUNTAIN MAPLE. Twin Lakes.

Acer macrophyllum, Pursh., BIG-LEAVED MAPLE. Lewiston Trail, Cañon Creek.

Æsculus Californica, Nutt., BUCKEYE. Lewiston Trail, Cañon Creek.

RHAMNACEÆ.

Rhamnus Californica, Esch., COFFEE-BERRY, CASCARA SAGRADA.

Two forms of this were observed — one with narrow leaves, along the road at lower elevations; the other with broad leaves, common around the lakes. Perhaps a variety of *Rhamnus Purshiana*, DC.

Rhamnus tomentella, Greene. Near Shasta and Whiskeytown.

Rhamnus crocea, Nutt. Whiskeytown.

Ceanothus cuneatus, Nutt. Common except at higher elevations.

Ceanothus integerrimus, H. & A. The same range as the preceding.

Ceanothus Lemmoni, Parry. On the hill between Lewiston and Weaverville.

Ceanothus velutinus, Dougl. The common species in Cañon Creek and around the lakes.

Ceanothus prostratus, Benth., MAHALA-MATS, SQUAW-CARPETS. (Not typical.) Cañon Creek, on the rocky hills.

VITACEÆ.

Vitis Californica, Benth., WILD GRAPE. Common everywhere along the road except at higher elevations.

CORNACEÆ.

Garrya, FRINGE-BUSH, QUININE-BUSH. Cañon Creek, around the lakes; new species.

Garrya Fremontii, Torr. Between Weaverville and Junction City.

Cornus glabrata, Benth., DOGWOOD. Lewiston Trail.

Cornus Nuttallii, Audubon. Lewiston Trail, Cañon Creek.

Cornus sessilis, Torr. Lewiston Trail.

Cornus pubescens, Nutt. Lewiston Trail and in other places near water.

Cornus stolonifera. Cañon Creek.

ERICACEÆ.

Ledum glandulosum, Nutt., LABRADOR TEA. Cañon Creek, near the lakes.

Rhododendron occidentale, Gray, AZALEA. Cañon Creek.

Kalmia glauca, L., MOUNTAIN LAUREL. Twin Lakes.

Bryanthus empetrifolius, Smith, MOUNTAIN HEATHER. Twin Lakes.

Cassiope Mertensiana, D. Don. On the summit of the ridge of Sunset Peak.

Leucothoe Davisiae, Torr. Cañon Creek.

Arbutus Menziesii, Pursh., MADROÑO. Lewiston Trail, Cañon Creek.

Arctostaphylos Nevadensis, Gray, MANZANITA. Twin Lakes.

Arctostaphylos patula, Greene. Packer's Camp, Cañon Creek, and in many other places.

Arctostaphylos viscida, Parry. Common except at the upper elevations.

Vaccinium cæspitosum, Michx., HUCKLEBERRY. Cañon Creek, at the upper end.

STYRACEÆ.

Styrax Californica, Torr. On the road between Shasta and Whiskeytown.

OLEACEÆ.

- Fraxinus dipetala*, H. & A., FLOWERING ASH. Near Weaverville.
Fraxinus Oregana, Nutt. Near Lewiston and in other places.

HYDROPHYLLACEÆ.

- Eriodictyon Californicum*, Torr., YERBA SANTA. Near Lewiston and in other places, but not common.

SCROPHULARIACEÆ.

- Pentstemon Lemmoni*, Gray. Occasionally seen along the road at lower elevations.

RUBIACEÆ.

- Cephalanthus occidentalis*, L., BUTTON-WILLOW, BUTTON-BUSH. Between Redding and Whiskeytown.

CAPRIFOLIACEÆ.

- Sambucus glauca*, Nutt., ELDERBERRY. Occasional at lower elevations.

- Sambucus callicarpa* Greene. At the upper lake; not yet in bloom. Perhaps not this species.

- Symphoricarpos mollis*, Nutt., WAX-BERRY. Lewiston Trail, Cañon Creek.

- Symphoricarpos racemosus*, Michx. Occasional along the roads.

- Lonicera ciliosa*, Poir., HONEYSUCKLE. Lewiston Trail.

- Lonicera conjugialis*, Kellogg. Upper end of Cañon Creek.

- Lonicera interrupta*, Benth. Between Redding and Whiskeytown.

COMPOSITÆ.

- Baccharis* sp. Unknown, and no specimen collected, as it was without flowers or fruit.

There were some low shrubby plants, such as *Vancouveria*, *Polygala*, *Chimaphila*, *Comandra*, *Erigonum umbellatum*, and *Smilax*, which have not been listed, as they are really herbs, though woody at base.

SIERRA CLUB BULLETIN.

PUBLISHED IN JANUARY AND MAY OF EACH YEAR.

Published for Members.

Annual Dues, \$3.00.

The purposes of the Club are:—"To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada Mountains."

OFFICERS FOR THE YEAR 1901-1902.

Board of Directors.

Mr. JOHN MUIR *President*
Mr. ELLIOTT McALLISTER *Vice-President*
Mr. J. N. LeCONTE *Treasurer*
Prof. W. R. DUDLEY *Corresponding Secretary*
Mr. WILLIAM E. COLBY *Recording Secretary*
Prof. CORNELIUS B. BRADLEY, Pres. DAVID STARR JORDAN,
Prof. GEORGE DAVIDSON, Mr. WARREN OLNEY.

Auditing Committee,

Directors OLNEY, McALLISTER, and DUDLEY.

Committee on Publications,

Pres. DAVID STARR JORDAN, *Chairman.*

Mr. J. S. HUTCHINSON, Jr.,	Dr. MARSDEN MANSON,
<i>Assistant Editor,</i>	Dr. EMMET RIXFORD,
Mr. A. G. EELLS,	Mr. T. P. ANDREWS,
Mr. J. S. BUNNELL,	Mr. R. H. F. VARIEL,
Prof. J. H. SENGGER,	Mr. TRACY R. KELLY.

Committee on Admissions,

Directors DUDLEY, OLNEY, and McALLISTER.

Committee on Parks and Reservations,

Prof. GEORGE DAVIDSON, *Chairman.*

Prof. W. R. DUDLEY,	Pres. DAVID STARR JORDAN,
Mr. J. M. ELLIOTT,	Mr. ABBOT KINNEY.

Committee on Outing and Transportation,

Mr. WM. E. COLBY, *Chairman.*

Mr. EDWARD T. PARSONS,	Mr. ARTHUR I. STREET.
------------------------	-----------------------

SECRETARY'S REPORT.

This has in many respects been one of the most auspicious years in the history of the Club's existence. The initial Sierra Club outing, which was successfully undertaken and carried through during this past summer, has infused new life and spirit into the Club. It has created a companionship and unity of good feeling hitherto lacking. This outing alone has added at least fifty new members to the Club, and future proposed outings bid fair to increase our membership with a quota of most desirable and enthusiastic mountain-lovers.

Over one hundred people formed the outing party that was encamped in the Tuolumne Meadows. In spite of predictions to the contrary, the outing was a complete success, and one of the most positive proofs of this was the fact that the majority of those in attendance on this trip were planning for next year's outing almost before they had reached home. The objection raised by many before the outing started, that being with such a large party would be unpleasant, proved entirely without foundation. In fact, the association with so many genial spirits, and the valuable instruction obtained from the learned lights of the party, made it a pleasure and a memory never to be forgotten. The party was so large that one could select the companions he or she preferred. Owing to the fact that this was the first outing of its kind, the committee worked at a disadvantage and made expenditures that could be avoided another year. This, together with the numerous obstacles to be overcome on account of the poor condition of the Tioga Road, etc., made the expense of the

outing heavier than it would be another year. Yet after balancing accounts, a deficit of but about \$30 remains to be settled, and there is on hand to offset this nearly \$150 worth of outfit in the way of tents, stove, utensils, etc., which can be used on other trips.

For the information of those who were members of the party, it will be stated that the committee were compelled to make the final assessment of four dollars, thus covering the entire rebate on the railroad tickets of those who traveled via Raymond, and leaving a balance of \$1.25 still due from those who took the Santa Fe route.

Plans are now being matured which will make the Club's headquarters in the Yosemite Valley more permanent and successful than they have ever been in the past. The Club will be obligated to any one who will kindly donate additions to the nucleus of a library which is being started there. Works on travel and science interesting to mountaineers are particularly desirable. It is also requested on behalf of the Club, that persons finding objects of interest on their travels, whether they be botanical, geological, biological, or otherwise, contribute the same to the collection which is being started at the headquarters.

Any member desiring to purchase any first-class unlimited tickets over either the Southern Pacific or Santa Fe railroads will confer a great favor by getting an order for them from the Secretary of the Club and paying the price of such tickets into the Club treasury, thus enabling the Club to realize on the advertising contracts it owns.

Very respectfully,

WM. E. COLBY,
Secretary of the Sierra Club.

REPORT OF OUTING COMMITTEE.

OUTINGS OF 1902.

The Sierra Club's Committee on Outing wishes to offer to the Directors the following suggestions as to the trips contemplated for the summer of 1902:—

1st. That the main trip, which will be taken under the personal direction of the Club through its committee, will be to the King's River Cañon and vicinity, and an opportunity afforded as many as may desire, to return via the Giant Forest.

2d. That excursions to the Yosemite Valley and the Colorado Cañon be also arranged for by the Club, but that these last will not necessarily be personally conducted by members of the Club.

3d. That fully-paid-up membership in the Sierra Club will entitle persons to join the outing party, and that qualified outsiders joining the outing must pay a fee in addition to the regular expense for the privilege of so joining.

In regard to the main outing, it is proposed to enter the mountains by way of Sanger, to which point railroad accommodations can be secured. From Sanger to Millwood, a distance of forty-six miles, stages will be provided, and at the end of the stage-road the party will immediately go into camp. Over the trails beyond this point the Club is not to be responsible for the transportation of anything other than baggage and freight, all members of the party being expected to walk the remaining distance of thirty-five miles, in from two to three days, though any person desiring to ride may be able to secure a saddle-horse on his own responsibility. The main camp will be established at the upper end of the King's River Cañon, and the objective

point for the mountain ascent shall be Mt. Brewer. From the main camp many splendid walks and high mountain climbs can be taken, and many may prefer to remain in the cañon enjoying the camp life, fishing, etc., during the whole outing. For those who wish to see the finest mountain scenery in the region,—the finest in fact to be found in the whole Sierra Nevada range,—an excursion will be arranged up the great cañon of Bubbs' Creek, to East Lake, from which the ascent of Mt. Brewer (13,886 feet) can be made. This point is chosen as furnishing, in the belief of your committee, the very finest mountain view to be obtained in the range, far surpassing that from Whitney, Williamson, or any of the higher summits. From East Lake the party will return to Bubbs' Creek, and proceed up its cañon to Bullfrog Lake, whence the Kearsarge Pass (12,050 feet) and University Peak (13,950 feet) may be climbed, and then return to the King's River camp. A pack-train will be running between Millwood and the King's River Cañon once or twice every week, so that mail can be sent out, and persons called away on business will have no trouble in leaving at almost any time. Large tents for general assemblage, cooks, packers, and pack-train, will be provided by the Club. It is expected that the high standard of excellence set last summer will in every way be maintained. The cost of the outing need not exceed forty dollars.

The main party will probably leave San Francisco about the 20th of June, and will remain away about three or four weeks. A prospectus will be issued during the spring, giving all details of the proposed trips.

Respectfully submitted,

J. N. LE CONTE,

E. T. PARSONS,

A. I. STREET,

WM. E. COLBY, Chairman,

Outing Committee.

NOTES AND CORRESPONDENCE.

In addition to longer articles suitable for the body of the magazine, the editor would be glad to receive brief memoranda of all noteworthy trips or explorations together with brief comment and suggestion on any topics of general interest to the Club. Descriptive or narrative articles, or notes concerning the animals, birds, forests, trails, geology, botany, etc., of the mountains, will be acceptable.

The office of the Sierra Club is at Room 45, Merchants' Exchange Building, San Francisco, where all the maps, photographs, and other records of the Club are kept.

There are but a few copies on file of No. 3, Vol. I., of the BULLETIN. The Club would like to purchase additional copies of that number, and we hope any member having extra copies will send them to the Secretary.

ON THE NAMING OF MOUNTAINS.

The Editor is in receipt of a letter, from a prominent and active member of the Club, suggesting that some action should *immediately* be taken on the question of the naming of mountains. He states that he wishes that some Board might be formed by the mountaineering clubs, to whom new names for mountains could be referred for final approval. Readers of the BULLETIN are referred to the excellent suggestions as to names, published in Volume II, page 53, of the SIERRA CLUB BULLETIN.

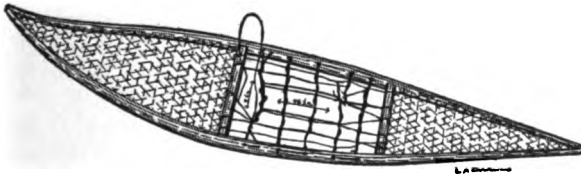
MIDWINTER TRIPS IN THE SIERRA.

Professor Brown's appreciative description of the beauties of the winter Sierra (published February, 1901, in Vol. III, No. 3, p. 242 *et seq.* of the BULLETIN) will doubtless prove sufficient incentive to many in the valleys of California to undertake winter trips to the higher levels of the Sierra.

Such trips have already been made from the plateau of Nevada as early as the winter of 1895-96. The condition of the snow met with on the eastern slopes of these mountains, however, has compelled the use of an equipment more elaborate in one particular than that proposed by Professor Brown. I refer to the use of snow-shoes.

These were found in every case to be necessary for some portion of each trip, to avoid the fatigue caused by constantly breaking through the thin crust prevalent below the altitude of 8,000 feet. Above this altitude, however, except in autumn, the snow was hardened beyond the possibility of breaking beneath any ordinary

weight. During two winter trips to the summit of Mt. Rose, 10,800 feet in altitude, both ski and Canadian snow-shoes were used by the members of our party, to the increasing credit of the one and the final discredit of the other. The disparity between them was due wholly to the weight and clumsiness of the ski and the lightness and manageability of the Canadian snow-shoes. In one respect only were the ski found to be superior to their competitor. For example, on the long and comparatively level slopes, where even a novice could use them with safety, the ski afforded a means of fast locomotion, somewhat akin to skating, while the Canadian snow-shoes permitted no greater speed than a brisk walk. As the steepness of the slope increased, however, the speed of the ski gradually decreased to that of the Canadian snow-shoes, while they dragged heavily on the hips of the person propelling them. Moreover, when the region of soft snow and thin crust had been surmounted and snow-shoes were discarded for the exhilarating climb over the snow-fields about the summit, the Canadian snow-shoes were readily carried as a part of the pack without greatly increasing its weight, while the ski became almost unmanageable, being too heavy to carry with comfort and too erratic to tow by a rope. In fact, the experience of both trips was the same, viz: that the person who used the ski was thoroughly exhausted by the climb while the other who had used the Canadian snow-shoes remained comparatively fresh throughout the day. The irritating propensity of both kinds of snow-shoes to slide downhill on hard and sloping surfaces was corrected by binding a small stick with sharp edges across their under surface just beneath our feet, where the weight of the body readily forced the wood into the snow. In this way we were able to traverse with comparative ease and safety all the snow-fields except the very steepest. The most suitable Canadian snow-shoe for mountain work seems to me to be the narrow-pointed shoe with heavy rims, as shown in the following illustration. The ordi-



nary broad shoe will be found too clumsy and too frail. Among other desirable snow-shoes are the cheap, very light, and at the same time durable, "Algäue Schnee-Reifen," supplied either with



(a) FORM MIT HANFDRAHTSCHNÜRUNG.

(b) FORM MIT HOLZFANGEN.

a rope mesh, as in (a), or with wooden slats, as in (b), for sale at M. 4 and M. 4.50, or including postage and duty scarcely more than \$2.50 and \$3.00, respectively, by Heinrich Schweiger, Munich, Rosenthal No. 7, Bavaria. Of these the former is more flexible, and therefore more comfortable to the foot; but a piece of wood should be bound across the bottom, as in the case of the Canadian snow-shoes, to prevent its slipping on an inclined surface. The serviceability of the rigid shoe (b) would also be largely increased by employing the same device.

The advisability of using snow-shoes under such conditions as those described by Professor Brown will be readily apparent in the consequent saving of one's shoes, which would otherwise soon be cut to pieces by the crust, or in the availability of the more comfortable rubbers and woolen leggings worn generally by woodsmen and mountaineers.

J. E. CHURCH, JR.

Reno, Nevada, November, 1901.

GENERAL DIRECTIONS AS TO ROUTE AND CAMPS IN TRINITY COUNTY.*

The route to Cañon Creek from Redding lies along either of the two roads leading to the town of Shasta, over the divide to Whiskeytown, where is found the first good camp, and on to Tower House, where the road to Weaverville branches, the right-hand one going through French Gulch, the other taking a more southerly course; the former being the road the stage takes, the latter the route of the heavy freighting-wagons. By taking the left-hand road to Harris's Ranch, about three miles beyond Tower House, pack-horses can be taken over the Lewiston Trail, thereby saving much dusty traveling, and, instead, passing through two very beautiful gulches. The trail is somewhat steep in one place, but there is nothing beyond the strength of even a poor pack-animal. After about seven miles of trail, the Lewiston road is reached in

* See page 39.

the vicinity of the town. By making some inquiries, the next trail can be found about a mile beyond the Trinity River, where it turns off to the left and climbs a hill to Packer's Camp, a pleasant place to stop for the night.

It is well to make very careful inquiries concerning the trails, as the directions are not always accurate and the roads sometimes interfere with what are otherwise well-defined trails: for instance, the Lewiston Trail leaves the road at Harris's, turns to the right up the gulch back of the barn, passes around a fenced field, and at the summit goes to the right again and reaches the road, where all trace of it is lost and only found again by going down the road to the left about three hundred yards, where it drops into the gulch on the left-hand side. Again, about one mile from Lewiston along the Weaverville road, there are two flumes passing over the road; beyond the second a small road turns to the left and goes to a ranch where the trail to Packer's Camp starts up the hill. From the camp the trail passes the summit, drops down the hill past an old sawmill, and connects with the road about four miles from Weaverville. From Weaverville the route lies along the road to Junction City, where Cañon Creek empties into Trinity River. Here the pleasant part of the trip commences; for here the road turns up the creek and follows it to Dedrick, twelve miles away, where the trail work begins.

The distances are about as follows: Redding to Shasta, six miles; to Whiskytown, six miles; to Tower House, six miles; to Harris's, three miles; to Lewiston, seven miles; to Weaverville, by trail, ten miles; to Junction City, ten miles; to Dedrick, twelve miles.

Leaving Dedrick, the trail turns to the left from the road within a few hundred yards of the hotel and winds along under the trees beside the creek, on the east side, to Bear Creek, about two miles above Dedrick. About one hundred yards beyond this point the trail turns abruptly and zigzags up the spur between Bear and Cañon Creeks, and when well up turns to the left and returns to Cañon Creek by a long descent. After two more detours, the old McKay cabin, located in a magnificent grove of trees, is passed, and soon the trees are succeeded by brush, extending to the first ford, which is one of the easiest in the cañon. The approach is down a steep bank, and the course is on to the lower end of the island, passing up this about two hundred yards and turning to the right, close to two superimposed logs, crossing back again to the east side. Some care will have to be exercised here, as the trail is not at all well defined, but by noting the indications and by making detours around obstacles, it may be followed to the brush below Hound's-Head Fall. The trail here leaves the creek and

returns to it at right angles above the falls and soon reaches the second ford, where it is necessary to cross to the west side, there being a log below the ford which may be traversed with some care. The trail is much obstructed at this point and requires a number of detours, but it will be found close to the creek at first; but gradually working away from it and returning at the third ford, which is shallow and easy for the animals. There is a log some three hundred yards up the creek, but the brush is dense and the ground swampy, and it is easier to wade. Here turn up the creek across the meadow to a large blazed tree which marks the entrance of the trail to the woods and keep fairly close to the creek to the fourth ford, where there is a log about two hundred yards above, reached by working back from the creek to avoid the denser brush along the bank. Above this point the trail works back from the creek to make a ford a little distance above the mouth of the branch which comes from the western amphitheater, above which it passes to the left of a cliff and returns near a small meadow to the fifth ford, one safe for the animals and easy for those on foot, by reason of the log to be found a few yards below. Follow the indications amongst the trees and up the rocky and brushy inclines near the falls; cross the meadow by working to the right and emerging at the northeast corner. Here the trail is very indefinite, but it is not very difficult to work out on the rocky slopes and find the trail as it enters the brush above.

If one wished to camp between the Twin Lakes, it is necessary to make another ford at the lower end of the lower lake, just below where the water breaks at its exit. Those on foot can walk the log below the cabin. From here there is a monumented trail leading to the upper lake, which works back to the cliffs to the west.

There is not much feed here for animals, and it may be necessary to camp below at the last meadow. Passage above the upper lake would be very difficult with animals, and is not easy without them. The most feasible route seems to be through the brush on the eastern edge of the lake, keeping as close to the water's edge as possible, thus gaining entrance to the upper amphitheater. Here in early July there remain large snow-fields.

The easiest way to Thompson's Peak, which is a sharp-crested mountain at the head of this amphitheater, is an open question. An attempt to reach it by the rough spurs forming the cliffs above the upper lake proved futile, as the distance around the amphitheater is too great for a one-day trip. The most direct route is up the main creek, but the peak may be inaccessible from that side. There is another large amphitheater containing lakes and snow-fields, and one to the west about two miles below Twin Lakes, with many small lakes and some magnificent scenery.

The peak which has been named Sunset Peak for want of another name may be ascended by a short, vigorous climb to the east, up the stream which waters the meadow a quarter of a mile below the lower lake. The lower of the twin pinnacles which form the summit may be reached from the saddle just north of it, there being only one place where any difficulty will be found. This is a wall standing almost vertical and having few projections for foot and hand hold. A rope is a convenience at this point. From the top of this peak there may be had a view which for wildness and grandeur is not excelled by any seen on a trip to the King's River Cañon and the mountain peaks at the head of Bubbs' Creek. Nor is there an equal area on King's River or Bubbs' Creek which contains so many of the features which go to make an ideal spot for lovers of wild mountain scenery. It is the same as that found in the High Sierra, with jagged granite peaks, knife-edge ridges, boulders, glaciated surfaces, high cliffs, beautiful lakes, and many waterfalls.

A permanent camp could be established and many days spent in exploring the surrounding country and in excursions over the ridges to the head waters of Trinity River, North Fork, and Salmon River. There are in the cañon, and within a radius of three miles of the camp, about eight mountain lakes, more than a dozen waterfalls, of various sizes, none combining height and volume, but all beautiful, many snow-fields and jagged peaks.

The distance from Dedrick to Twin Lakes is about nine miles, which, with no delays, should be made in a day and a half with ordinary pack-animals; while the return should be made in a day.

S. L. BERRY.

CLARENCE KING.

Clarence King, the eminent geologist and scientist, died in Phoenix, Arizona, December 24, 1901. He was born in Newport, R. I., January 6, 1842. When a boy he spent his long summer vacations camping out in the Green Mountains. He graduated from the Sheffield Scientific School of Yale University in 1862, and the year following came to California and accepted a position with Josiah D. Whitney, who was then making a survey of California. While with the survey he discovered and named Mount Whitney and Mount Tyndall.

He was a member of many scientific societies, and in 1876 was chosen a member of the National Academy of Sciences. He wrote for magazines and was the author of "Mountaineering in the Sierra Nevada," an admirable book full of interest.

The following extracts taken from his preface to his book show the deep interest he took in mountaineering and also his appreciation of the beauties of nature :—

"There are turning-points in all men's lives which must give them both pause and retrospect. In long Sierra journeys the mountaineer looks forward eagerly, gladly, till pass or ridge-crest is gained, and then, turning with a fonder interest, surveys the scene of his march; letting the eye wander over each crag and valley, every blue hollow of pine land or sunlit gem of alpine meadow; discerning perchance some gentle reminder of himself in yon thin blue curl of smoke floating dimly upward from the smoldering embers of his last camp-fire. . . . But as the cherished memories of Sierra climbs go ever with me, I may not lack the inspiring presence of sunlit snow nor the calming influence of those broad, noble views. It is the mountaineer's privilege to carry through life this wealth of unfading treasure. At his summons the white peaks loom above him as of old; the camp-fire burns once more for him, his study walls recede in twilight revery, and around him are gathered again stately columns of pine. . . . If along the peaks I have sought to describe there is reflected, however faintly, a ray of that pure splendid light which thrills along the great Sierra, I shall not have amused myself with my old notebooks in vain. (New York, March, 1874.)"

FORESTRY NOTES.

 EDITED BY PROFESSOR WILLIAM R. DUDLEY.

FORESTRY IN PRESIDENT ROOSEVELT'S MESSAGE. By far the most noteworthy contribution to the literature of forestry in recent years is to be found in the President's Annual Message communicated to Congress December 3, 1901. It is remarkable that President Roosevelt is the first President since Washington who has made it clear from the beginning that he is not only President of the United States, but of the great National Domain itself. What he says of forestry, the arid lands, and irrigation are clearly the words of one who has hunted, camped, and climbed among the mountains and traversed the dry plains of America's own personal estate west of the Mississippi. His words are such an admirable summary of what the Sierra Club has advocated for nearly ten years, that we quote them, as a matter of record:—

Public opinion throughout the United States has moved steadily toward a just appreciation of the value of forests, whether planted or of natural growth. The great part played by them in the creation and maintenance of the national wealth is now more fully realized than ever before.

Wise forest protection does not mean the withdrawal of forest resources, whether of wood, water, or grass, from contributing their full share to the welfare of the people, but, on the contrary, gives the assurance of larger and more certain supplies. The fundamental idea of forestry is the perpetuation of forests by use. Forest protection is not an end of itself; it is a means to increase and sustain the resources of our country and the industries which depend upon them. The preservation of our forests is an imperative business necessity. We have come to see clearly that whatever destroys the forest, except to make way for agriculture, threatens our well-being.

The practical usefulness of the national forest reserves to the mining, grazing, irrigation, and other interests of the regions in which the reserves lie has led to a wide-spread demand by the people of the West for their protection and extension. The forest reserves will inevitably be of still greater use in the future than in the past. Additions should be made to them whenever practicable, and their usefulness should be increased by a thoroughly businesslike management.

At present the protection of the forest reserves rests with the

General Land Office, the mapping and description of their timber with the United States Geological Survey, and the preparation of plans for their conservative use with the Bureau of Forestry, which is also charged with the general advancement of practical forestry in the United States. These various functions should be united in the Bureau of Forestry, to which they properly belong. The present diffusion of responsibility is bad from every standpoint. It prevents that effective co-operation between the Government and the men who utilize the resources of the reserves, without which the interests of both would suffer. The scientific bureaus generally should be put under the Department of Agriculture. The President should have by law the power of transferring lands for use as forest reserves to the Department of Agriculture. He already has such power in the case of lands needed by the Departments of War and the Navy.

The wise administration of the forest reserves will not be less helpful to the interests which depend on water than to those which depend on wood and grass. The water supply itself depends upon the forest. In the arid region it is water, not land, which measures production. The western half of the United States would sustain a population greater than that of our whole country to-day if the waters that run to waste were saved and used for irrigation. The forest and water problems are perhaps the most vital internal questions of the United States at the present time.

Certain of the forest reserves should also be made preserves for the wild forest creatures. All the reserves should be better protected from fires. Many of them need special protection because of the great injury done by livestock, above all by sheep. The increase in deer, elk, and other animals in the Yellowstone Park shows what may be expected when other mountain forests are properly protected by law and properly guarded. Some of these areas have been so denuded of surface vegetation by overgrazing that the ground-breeding birds, including grouse and quail, and many mammals, including deer, have been exterminated or driven away. At the same time the water-storing capacity of the surface has been decreased or destroyed, thus promoting floods in times of rain and diminishing the flow of streams between rains.

In cases where natural conditions have been restored for a few years vegetation has again carpeted the ground, birds and deer are coming back, and hundreds of persons, especially from the immediate neighborhood, come each summer to enjoy the privilege of camping. Some at least of the forest reserves should afford perpetual protection to the native fauna and flora, safe havens of refuge to our rapidly diminishing wild animals of the larger kinds, and free camping-grounds for the ever-increasing numbers of men and women who have learned to find rest, health, and recreation in the splendid forests and flower-clad meadows of our mountains. The forest reserves should be set apart forever for the use and benefit of our people as a whole and not sacrificed to the short-sighted greed of a few.

The forests are natural reservoirs. By restraining the streams in flood and replenishing them in drought, they make possible the use of waters otherwise wasted. They prevent the soil from washing, and so protect the storage reservoirs from filling up with silt. Forest conservation is therefore an essential condition of water conservation.

The discussion of the question of irrigation immediately following that of forestry, is equally pertinent and at greater length. Indeed, this subject has attracted greater attention during the last six months than forestry, and awakened greater interest than ever before. But in the national or State schemes whatever legislation advances one is pretty sure to assist the other.

**APPROPRIATIONS
TO THE BUREAU
OF FORESTRY.**

The following are the appropriations made by Congress to the Division (now the Bureau) of Forestry: In 1898, \$20,000; in 1899, \$40,000; in 1900, \$80,000; in 1901, \$146,280; estimated for 1902, \$260,180.

Should the consolidation of the forestry work in the national forests be carried out this winter by Congress, as suggested by the President and urged by others for three years, the appropriation above given as the estimate by the Department of Agriculture for 1902 might be very greatly changed. It will be seen that the beginning of growth in the Congressional appropriation is nearly coincident with the settlement of the great controversy over the Cleveland Forest Reserves and the commencement of the work of the present Forester, Mr. Pinchot.

**JUDGE WELLBORN'S
DECISION REGARD-
ING GRAZING ON
THE RESERVES.**

It will be remembered that several sheepmen were arrested in 1900 by order of the Secretary of the Interior for poaching on the Sierra Forest Reserve. The Federal Court convened at Fresno in November of that year held that the Interior Department could not penalize the offenders, as it had no right to make encroachment on the reserve a penal offense without act of Congress. Civil suits were instituted, however, against the sheepmen, to recover damages. Hearing on these civil cases came up in the United States District Court late last spring. The *Fresno Republican* gives the following account of Judge Wellborn's decision sustaining the Interior Department in this important matter:—

The attorneys for the sheepmen in four cases, two against L. A. Blasingame and others, two against John Shipp and others, had entered demurrers to the complaints on two grounds: First, that the State law gave stockmen the right to pasture on the public domain unless the owners of the land took action to shut them off by fencing; second, that the privilege to pasture on public lands has been conceded so long by the United States that it has become a right, and cannot be taken away without special act of Congress.

Judge Wellborn gave an oral opinion on both these points in overruling the demurrer. In first commenting on the claims that the State law permitted the pasturing of the public lands unless it was fenced, he declared that this would not hold; as he construed

the term "public lands" to signify the Federal lands lying open on the market for pre-emption or homesteads, and that when the Government had reserved certain holdings from pre-emption they ceased to be "public lands." On this ground the State would hold that the forest reserves were the private property of the National Government in the same way that other land is held privately, and could be defended from trespass.

Secondly, the Judge held that it could never be considered, whatever the State law might be with regard to the holding of public land and the right to pasture, that the Federal Government could be deprived of its control of the land or the right to protect it in the Federal courts.

As to the claim that the graziers had a right from long presence to go upon the Federal domain until Congress should decree otherwise, the court held that Congress had never given any such right; that it had been exercised through many years through the sufferance of the Executive Department of the Government, and the Executive Department could take it away at any time, should the public interest and the purpose of forming the reserve require it. The court, therefore, overruled the demurrer.

District Attorney Flint, in speaking of Judge Wellborn's decision, afterward stated that this decided the law fully, and would give the Federal authorities absolute control of the situation, suits could be brought to recover damages in case of trespass, and injunction proceedings be made to bear on the stockmen if they threaten to go upon the reserves.

**THE PROPOSED
BIG BASIN
PARK** The preliminary examination of the redwood property offered for sale in the vicinity of the Big Basin, has gone on with great thoroughness on the part of the Commission, some of the members having gone over every available trail and followed all the streams. All the members have spent several days in the Basin, accompanied by an advisory committee consisting of timber-land owners and men long familiar with timber values. Timber cruisers have been sent over the tracts offered to the Commission, and a surveyor has meandered the streams, where more information was needed. Whatever the decision of the Commission, it will be based on as clear an understanding of the situation as timber purchasers ever have.

It will be remembered that no purchase money can be paid from the State treasury until after January 1, 1902.

THE LESSON OF A VETO.

TO THE EDITOR OF THE SIERRA CLUB BULLETIN:—The State of New York, since 1885, has expended above \$3,000,000 in acquiring title to forest lands in various parts of that State. During the session of the Legislature last winter, a bill appropriating \$200,000 for the purchase of further land within the area outlined as the "Adirondack Park" in the northeastern part of the State, passed both houses, but was vetoed by Governor Odell. The writer has no knowledge of the latter's point of

view generally on such economic problems as forestry or the water-supply of the commonwealth, but the words of his veto express a principle that ought to prevail in legislation everywhere, particularly in regard to irrigation and forestry appropriations. Governor Odell says: "In my judgment the time has arrived to consider what the policy of the State is to be with reference to the acquirement of land in the Adirondacks for the forest preserve. Over two millions of dollars have already been expended for that purpose, and as yet no comprehensive plan has been finally determined upon as to the State's policy and the amount that shall be expended in carrying out the improvement for the preservation of the State's forest and water supply. Until a definite scheme shall have been adopted, it seems to me unwise to make small appropriations annually." The justice of this comment will be seen when it is known that forest students and experts have for some years remarked the singular negligence of New York, in view of its great expenditures for forest land, in delaying the establishment of any system whatever by which the forest products could be properly utilized from a forester's point of view. In the latter's judgment, a State preserve acquired for forest purposes, and then allowed to lie idle is an anomaly. It seems that the New York Forest Preserve Board and the friends of the Park have also failed to formulate a comprehensive plan for the completion of the park and utilization of the forest and water-supply, although the State has willingly expended millions in the acquirement of land. It ought to be evident that no bill appropriating the money of taxpayers should be passed, unless it specify as far as possible the mode of expenditure, the objects, and the early reports of such work accomplished, as will reasonably show the utility of the expenditures. If a bill is not as clear as the nature of the case will permit on these points, then it is the duty of a Governor to object to it. At the next session of the Legislature, the California Water and Forest Association will probably renew their effort to have a bill passed appropriating a sum of money for surveys of reservoir sites in aid of irrigation works. Many of the reservoirs if built upon such sites will benefit the larger and very wealthy landholders. It is here suggested that the framers of the bill not only consider the advisability of making the requirements as to the results to be accomplished through the expenditure of the funds explicit, but that they make the use of the appropriation contingent on the contribution of an equal sum, by vested interests to be benefited by the bill. There is little doubt that any California Governor and Legislature elected next autumn will approve a bill constructed along such lines.

A MEMBER OF THE CALIFORNIA WATER AND FOREST ASSOCIATION.

Europe

California

Alpine Climbing

Mont Blanc
15,002 feet

The Matterhorn
14,800 feet

The Jungfrau
12,300 feet

The Italian Lakes

The English Lakes

The Cathedrals

The Riviera

Mount Whitney
15,880 feet

Mount Shasta
15,444 feet

Mount Tallac
10,400 feet

The Sierra Lakes

Lake County

The Old Missions

The Sunny South

The American who goes abroad for his sight-seeing, climbing, hunting and fishing, leaves a greater wonderland behind him, and in mountain climbing he reaches the apex of splendor in

CALIFORNIA

A note to the nearest agent will bring illustrated literature published by

Southern Pacific Company

We Knit Good Sweaters For Mountaineers

**STOCKINGS AND SLEEPING CAPS
BATHING SUITS**

All Weights
and Styles of **UNDERWEAR** For the
Mountains

Gantner & Mattern Co., 20 Post St., S. F.

PUBLICATIONS OF THE SIERRA CLUB

- No. 1.—Articles of Association, By-Laws, and List of Members.
- Nos. 4 and 5.—Maps of Portions of the Sierra Nevada adjacent to the Yosemite and to King's River, 1893.
- No. 8.—Table of Elevations within the Pacific Coast, 1895, by Mark B. Kerr and R. H. Chapman. *Price, 25 cents.*
- No. 12.—Map of the Sierra Region, May, 1896. *Price, \$1.50.*
To be had of Theodore S. Solomons, 508 California Street, San Francisco, California.
- Nos. 2, 3, 6, 7, 9, 10, 11, 13, together forming Volume I. of the SIERRA CLUB BULLETIN.
- Contents of Volume I.—Ascent of Mt. Le Conte; Address on Sierra Forest Reservation; California Outing; Crater Lake, Oregon; Diamond Hitch; Explorations North of Tuolumne River; Forest Reservations; From Fresno to Mt. Whitney, via Roaring River; From Gentry's to El Capitan and Yosemite Falls; Grand Cañon of the Tuolumne; Head-waters of King's River; Kern and King's River Divide; King's River and Mt. Whitney Trails; Knapsack Tours in the Sierra; Mt. Bernard; Mt. Tahoma; Mt. Whitney Trail; New Grove of Sequoia Gigantea; Notes on the Pine Ridge Trail; Route up Mt. Williamson; Search for a Route from the Yosemite to the King's River Cañon; Sources of the San Joaquin; Three Days with Mt. King; Through Death Valley; Through the Tuolumne Cañon; Tramp to Mt. Lyell; Upper Sacramento in October; Notes, Correspondence, and Reports.
- Nos. 14, 15, 16, 17, 18 and 19, together forming Volume II. of the SIERRA CLUB BULLETIN.
- Contents of Volume II.—Ascent of the White Mountains of New Mexico; Basin of the South Fork of the San Joaquin River; Conifers of the Pacific Slope, Parts I and II; Day with Mt. Tacoma; Early Summer Excursion to the Tuolumne Cañon and Mt. Lyell; Expedition of Prince Luigi Amedeo of Savoy to Mt. St. Elias; Explorations of the East Creek Amphitheater; From Mt. Rose to Mt. Shasta and Lower Buttes; Kaweah Group; Lava Region of Northern California; Mountain Trips: What to Take and How to Take It; Neglected Region of the Sierra; Observations on the Denudation of Vegetation—Suggested Remedy for California; On Mt. Lefroy August 3, 1896; On Mt. Lefroy August 3, 1897; Philip Stanley Abbot; Taking of Mt. Balfour; To Tehipite Valley from the King's River Grand Cañon; Up and Down Bubb's Creek; Wanderings in the High Sierra Between Mt. King and Mt. Williamson,—Parts I and II; Woman's Trip Through the Tuolumne Cañon; Yosemite Discovery; Notes, Correspondence, and Reports.
- No. 20.—Volume III., No. 1, pp. 1 to 118—price \$1.00.—Ramblings Through the High Sierra (Reprinted from "A Journal of Ramblings," privately printed in 1875); Editorial Notice; Ouzel Basin; Forestry Notes.
- No. 21.—Ramblings Through the High Sierra. (Specially bound; without Editorial Notes, etc.)
- No. 22.—Volume III., No. 2, pp. 119 to 188.—Lake Tahoe in Winter; Ascent of "El Yunque"; Another Paradise; King's River Cañon Trail Notes; Ascent of "Matterhorn Peak"; Reports; Notes and Correspondence; Forestry Notes.
- No. 23.—Volume III., No. 3, pp. 189 to 270.—Parks and Peaks in Colorado; The Work of the Division of Forestry in the Redwoods; The Mazamas on Mt. Jefferson; Wagon-Trips to the Sierra; The Big Basin; The Re-Afforesting of the Sierra Nevada; The Descent of Tenaya Cañon; An Ascent of Cathedral Peak; A Glimpse of the Winter Sierra; Notes and Correspondence; Forestry Notes.
- No. 24.—Volume III., No. 4, pp. 271 to 339.—The Mazamas on Mt. Rainier; Lassen Buttes: From Prattville to Fall River Mills; Zonal Distribution of Trees and Shrubs in the Southern Sierra; Mt. Washington in Winter; Round About Mt. Dana; Notes and Correspondence; Forestry Notes; Reports.

On receipt, in good condition, of a full set of the numbers comprising Volumes I. or II., together with the sum of \$1.25, a bound volume will be forwarded, postpaid.

Each number, 50 cents.

Volume I., No. 3, and Volume II., No. 1, are out of print.

Members may have additional copies of the bulletins at half rates.

Copies of the above publications may be had on application to the Secretary, Merchants' Exchange Building, San Francisco, Cal.

PUBLICATIONS OF THE SIERRA CLUB

Number 26

SIERRA CLUB BULLETIN

Vol. IV

No. 2



JUNE, 1902

SAN FRANCISCO, CAL.

1902

SIERRA CLUB BULLETIN

Vol. IV.

JUNE, 1902

No. 2

CONTENTS:

	PAGE
INTO THE HEART OF CATARACT CAÑON . <i>William A. Brewer</i> .	77
Plates LVII. (Frontispiece), LVIII., LIX., LX.	
MY TRIP TO KING'S RIVER CAÑON (Reprint) . <i>Joseph Le Conte</i> .	88
Plate LXI.	
CONIFERS OF THE PACIFIC SLOPE . . . <i>John G. Lemmon</i> . .	100
Plates LXII., LXIII., LXIV.	
BIRDS OF THE HIGH MOUNTAINS . . . <i>Vernon L. Kellogg</i> .	132
Plates LXV., LXVI., LXVII.	
ORGANIZATION OF SIERRA CLUB	146
SECRETARY'S REPORT	147
TREASURER'S REPORT	149
LE CONTE MEMORIAL REPORT	150
KING'S RIVER OUTING REPORT	151
NOTES AND CORRESPONDENCE:	
A Flora of King's River	153
Trees Along Tulare Trails	153
A Winter Trip to King's River Cañon	156
Ice-Caves	159
Notes Concerning Bright Angel Trail, etc.	160
Grand Cañon Excursion	165
Letter—containing quotation from John Muir	168
Letter from Philippines	172
FORESTRY NOTES <i>William R. Dudley</i> .	173

All communications intended for publication by the SIERRA CLUB, and all correspondence concerning such publication, should be addressed to the Assistant Editor, J. S. Hutchinson, Jr., Sierra Club, Claus Spreckels Building, San Francisco, California.

Correspondence concerning the distribution and sale of the publications of the Club, and concerning its business generally, should be addressed to the Secretary of the Sierra Club, Merchants' Exchange Building, San Francisco, California.

PACKING

good groceries for safe delivery
requires experience

You shouldn't run the risk of having
your supplies arrive in poor condition.
Catalogue sent on request.

GOLDBERG, BOWEN & CO.

432 Pine Street

San Francisco



Skinner is at
416 Market Street

He's doing the Outfit-
ting this year

Especially in such goods as Guns,
Fishing Tackle, and Tents

See his patent knapsack

He has the Sleeping Bags for the
high altitudes

He has Special Clothing and

Footwear

For Campers and Trampers

Special Air Pillows

H. E. Skinner Co.

416 Market Street
San Francisco

We furnish the Club this year a special shoe, individually made to order, which will not break in the shank or cut on the heel. It has the endorsement of the Outing Committee.



WALKOVER SHOE CO.

924 Market Street

San Francisco

Since it requires several weeks to have your shoes made to measure place your order at once so that they may be finished in time

NEVILLE & Co.

31 and 33 California Street

MANUFACTURERS OF AND DEALERS IN

**Tents,
Awnings,
Covers,**

**BAGS, TWINES, HAMMOCKS,
CAMP FURNITURE, ETC.**

TENTS TO RENT

AS THIS IS THE BUSY SEASON ORDER AT ONCE

HOUSE & GALLAGHER

Proprietors of Mail Stage Line connecting with

..KING'S RIVER CANYON..

Summer Excursion Rates from San Francisco to Millwood and General Grant National Park, round trip railroad and stage fare, \$19.40. For further particulars, address

SANGER, CAL.



he high altitudes
make WARM
and HEALTHFUL
B E D D I N G
a necessity

One of the members of the Outing Committee strongly recommended the use of the MERRITT WOOL HEALTH COMFORT for the King's River Trip

Merritt Health Comfort, size 72x81, 3 lbs. . . \$3.50 each
Gray Wool Camping Blankets . . . \$3.00 to 4.50 each

We outfit women Sierrans from top to toe—tramping hats, linen waists, khaki skirts, stout boots and leggins.

TAFT & PENNOYER

BROADWAY AND FOURTEENTH
O A K L A N D

Camp Sierra and Giant Forest Stage Line

BRODER & HOPPING, PROPRIETORS
KAWEAH, CALIFORNIA

Camp Sierra is situated in the midst of the Giant Forest, fifty-five miles from Visalia. Special arrangements made for parties wishing to visit King's and Kern River Canyons and Mt. Whitney. Send for folder and full particulars. Connect with Southern Pacific at Visalia.

The Sierra Club

SETS A GOOD EXAMPLE

Two in fact: interest in our grand
mountains and an annual outing

GO AND DO LIKEWISE



The Southern Pacific

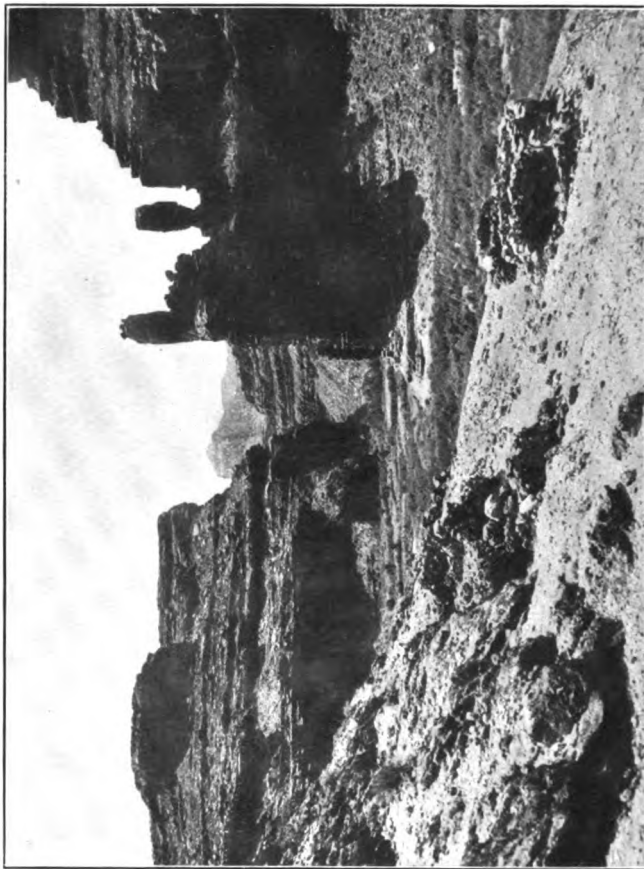
will help you to get to : : :

Shasta
McCloud
King's River
Tahoe or
Yosemite

Improve your health while taking
in the grand scenery and seeing
the relation of mountains and
forests to a prosperous State

ILLUSTRATED LITERATURE FREE AT

INFORMATION BUREAU



HAVASUPAI GODS, WITH STONE FORTS IN FOREGROUND, CATARACT CAÑON.

From a photograph by F. H. Maule.

SIERRA CLUB BULLETIN.

VOL. IV.

SAN FRANCISCO, JUNE, 1902.

No. 2.

INTO THE HEART OF CATARACT CAÑON, GRAND CAÑON OF ARIZONA.

BY REV. WILLIAM A. BREWER.

Now that the Grand Cañon of Arizona has been "discovered," and the Santa Fe trains run to its very edge, or rim, we are likely during the next few years to hear much of its depths and heights, of its fauna and flora, and of the marvelous color-effects reflected from the ribboned strata of its rocky cliffs. I should like, however, in this article to take my readers to the Grand Cañon and beyond, and to tell them of a trip that I made in the summer of 1901 into the heart of a cañon tributary to the Grand Cañon—a cañon lacking in the stupendous heights and distances of the greater gorge, but abounding in brilliant-colored cliffs, in wonderful vegetation, in waterfalls surpassed in beauty by none in all the world—a cañon in whose rocky heart dwells a hermit-tribe of Indians, whose history and customs make up one of the most romantic chapters in the story of the native tribes of America.

Cataract Cañon, or Havasupai Cañon, begins as an insignificant rocky gorge, not far from Williams, Arizona. For one hundred miles (at a rough guess) it zigzags its

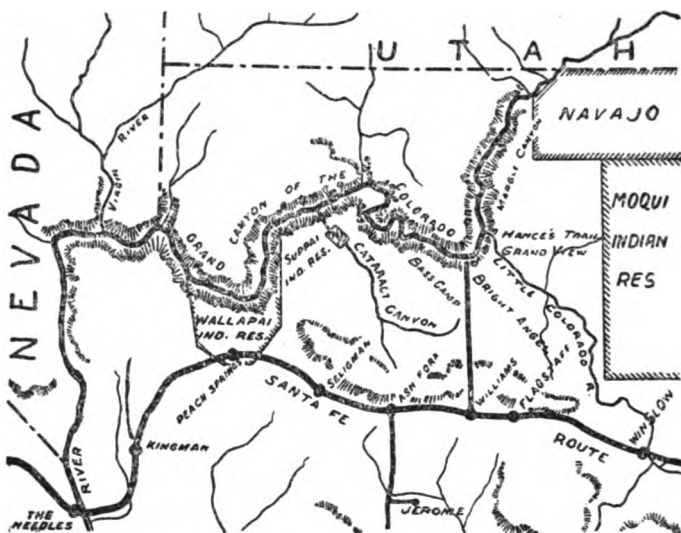
way to the northwest, gradually increasing in depth and grandeur, until finally it finds its way into the Grand Cañon, and its blue waters mingle with the muddy tide of the Colorado. If Cataract Cañon is one hundred miles long, ninety-two of those miles will show you a barren gorge, narrow, desolate, with scarcely a tree or shrub or living thing, its thirsty bed of sand and gravel knowing not what moisture means, save when the summer cloud-burst brings a momentary deluge that cuts and carves its way through the living rock.

But at the beginning of the ninety-third mile, or about eight miles above its junction with the Grand Cañon, a marvelous change occurs. In the cañon's bed, before your astonished eyes, there well up great bubbling springs of water—springs fifteen feet in diameter—and discharging torrents of the bluest water that you ever saw in all your life. And as you glance down the cañon you behold the Havasu River, and the breeze brings to your ears the distant echo of its torrents and waterfalls. Here in this gorge, scarcely a quarter of a mile wide, boxed in by walls of superb red sandstone, towering upwards for four hundred feet on either side, dwell our hermit Indians. *Havas* means "blue water" in their language, and *pai* means "people." They are the Havasupai Indians, known to cowboys and to the outer world as Supais. One can easily believe that many generations ago these red men dwelt upon the plains above, and tiring of the ceaseless warfare with Apaches and other hostile tribes, withdrew from the main company and sought the peaceful recesses of this rocky retreat. Their traditions tell how a band of Apaches trailed them later on, and laid siege to them. But the Havasupais loved their new home too well to give it up, and not an Apache returned to tell the tale. All were ambuscaded and killed.

But I have not told my readers how to reach the so-

called Supai villages; and as my purpose in writing these hasty lines is to enable others to enjoy the sights which I have seen, I shall describe somewhat minutely the trip thither. In the *SIERRA CLUB BULLETIN* of June, 1901, I have told how I reached Bass Camp, or Surprise Outlook, on the rim of the Grand Cañon. Briefly, the Santa Fe train took me from San Francisco to Williams, Arizona, whence the Grand Cañon Railway makes its sixty-mile trip to the Bright Angel Hotel at the rim. At a station about ten miles from the terminus Mr. W. W. Bass (whose post-office address is Williams, Arizona) met me with a team and took me to Bass Camp, a point on the rim some twenty-six miles west of Bright Angel Hotel. I found Bass Camp an excellent base from which to make the Cataract Cañon trip, for here were experienced and accommodating guides, good horses and burros, and abundant supplies.

My journal tells me that at four o'clock on the afternoon of May 25, 1901, we left Bass Camp for Cataract Cañon. There were five of us—two men and three horses. My guide was Richard Bleak, known on the Painted Desert as "Dad." The third horse carried the pack, consisting of provisions and cooking utensils, deposited in regulation cuyacks, a bag of barley above and between, and, towering over all, our blankets. The diamond hitch held all these goods together, and our pack-horse fell into a gentle lope from time to time, without the slightest danger to blankets or bacon, as we trailed across the desert. There were twelve miles of desert before us. Our trail led through forests of piñon, cedar, and juniper. There were flowers of brilliant hue at our feet, a hawk or buzzard could be seen overhead now and then, and the sun, descending behind some black clouds in the west, cast its brilliant rays in our eyes as we pushed on. We failed to reach Topocobya before nightfall, however, and



MAP OF THE GRAND CANYON OF THE COLORADO AND VICINITY, ARIZONA.

made our camp beside the road. About two miles back we had gone through a newly built gate in a north-and-south fence, which Dad told me marked the eastern boundary of the Supais' horse-pasture, and within the inclosure we saw a little later four of their ponies grazing.

Early the next morning we were again on the trail. The country, as we proceeded westward, became more hilly, with deep washes, along one of which our trail led. Soon the sides became more precipitous, and the path rocky. But I was quite unprepared for the sight that was soon to meet my eyes. Our trail suddenly left the wash, and we found ourselves at the top of a vast declivity bestrewn with huge sandstone boulders, any one of which seemed likely at an instant's notice to topple over and find its thunderous way to the gorge's bed beneath. In and out among these boulders, always downward, we threaded our dangerous way. It was the steepest, roughest, most dangerous trail that I had ever known. Straight

down, it was perhaps one thousand feet, but the many turns and bends made the trail much longer. Just before we reached the bottom we made a sharp turn to the left, and found ourselves at Topocobya. It is a huge precipice, fully four hundred feet in height, semi-circular, and giving forth at its base some trickling streams of water that form three shallow pools, one ten feet in diameter, one six, and one four. In front of the pools is a black willow thirty feet high and a foot in diameter. The pools are full of wigglers. But wigglers show that the water is not stagnant, or, as my guide put it, "If the wigglers can stand it, I can." It is the first water that the horses have had since they left Bass Camp. They drink their fill, and we replenish our canteens. The sun was at such an angle that I could not get a photograph of Topocobya cliff, nor have I ever seen a picture of it. Let us hope that this summer some member of the Sierra Club may be more successful.

We have now reached the half-way point of our journey. Down Topocobya Cañon (sometimes called Lee Cañon) for some five or six miles our trail leads us along the bottom or sides of a rocky gorge. We start in a stratum of yellow sandstone, but soon reach the red, and note the remarkable "seal-head" formations in the rocky wall on either side. In some places the trail leads along smooth, shelving rock, and if the horses' shoes are worn there is great danger of slipping. This is especially the case in one or two places near the mouth of Topocobya Cañon. In order to get into Cataract Cañon at this point we have to make a sharp turn to the left into a tributary gorge known as Rattlesnake Cañon, and along the shelving rock at the turn the traveler is willing indeed to obey his guide's instructions to dismount and take the path on foot. I must mention here the superb masses of light sandstone

that met our gaze in the western distance as we journeyed along Topocobya Cañon. One huge pile assumes the shape of a glorious cathedral, with noble pillars and buttresses—a pile from whose colossal bulk could be hewn stone enough to construct all the cathedrals that the world has ever seen.

At last we have reached Cataract Cañon, and there remain but three or four miles of trail along its sandy bottom before we reach the Supai villages. The turns in the cañon during this distance are as sharp and acute as the angles of a streak of lightning, and many times more numerous. One traveler tied forty-three knots in the fringe of his buckskin shirt when making the journey—one knot for each turn. But we are hot and tired, and before we enter upon the home-stretch to the right we visit the interesting pictographs to be seen in a sort of cave about one hundred feet away on the left. (Illustration 2.) No living Indian seems able to interpret these symbols. They are frescoed upon the rock in beautiful colors, and would seem to be prehistoric. Cushing describes this place as "a resounding cave, the walls of which were painted with emblems, and whose nooks were the hunting shrines of the strange inhabitants. . . . Here, seated on the ground, the worshiper blows smoke to the north, west, south, and east, upward and downward; then says in a low tone some simple prayer." Let me here refer the reader to Cushing's thrilling account of his journey from Zuñiland to "The Nation of the Willows." It may be found in the *Atlantic Monthly* for September and October, 1882, and should be carefully read by any one who has even a remote intention of visiting Cataract Cañon.

Once more we are in the saddle, and the sun is still blazing upon the eastern wall of our rocky prison when we reach the groves of willow and sycamore and hear the



ILLUSTRATION 1.—SCENE ON HUALAPAI TRAIL, CATARACT CAÑON.

From a photograph by F. H. Maude.

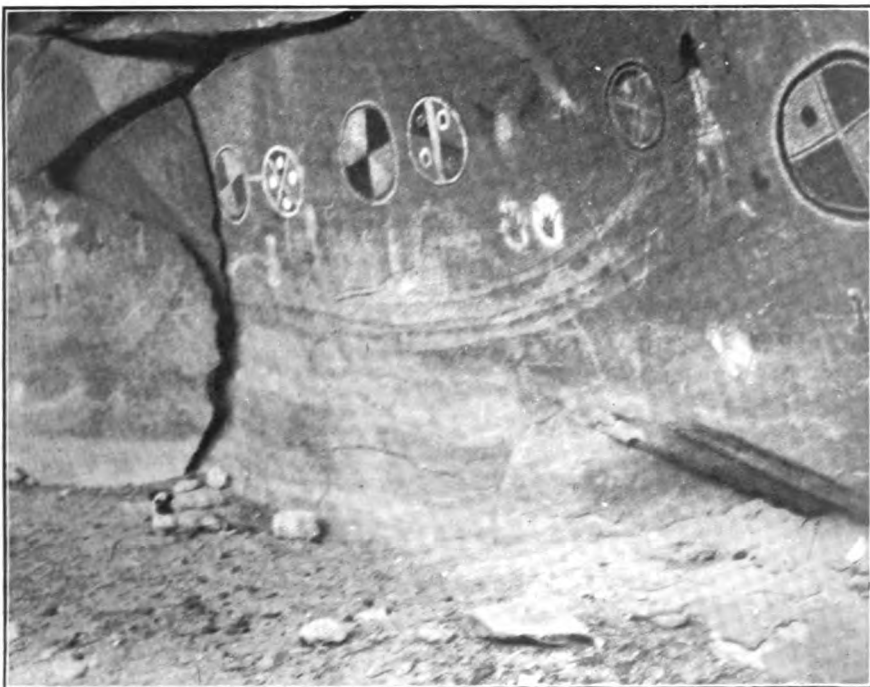


ILLUSTRATION 2.—CRYPTOGRAMS, CATARACT CAÑON.

From a photograph by William A. Brewer.

laughing waters of the Havasu. The voices of children at play; the Indian ponies grazing here and there; smoke curling through the trees from some hut, or hogan; the tinkle of cowbells high up on the cliff; the voice of an Indian hallooing to his distant companion; the wistful faces of the natives who draw near with curious eyes; the glimpse of the stone schoolhouse and of the agent's home to be had by peering through the luxuriant foliage—these sights and sounds are welcome to us, as we unsaddle our beasts and watch them as they refresh themselves at the springs. The waters of the Havasu are at once the hope and the doom of the Havasupai Indian. From day to day they assuage his thirst, and from day to day they seal his inevitable fate. These waters come from far. Dashed perchance upon the Painted Desert from the bosom of some black thunder-cloud, or descending from the melting peaks of the San Francisco Mountains by some secret passage, they trickle down through the faults and crevices of the cross-bedded sandstone, finally meeting upon the unbroken surface of the underlying limestone. Then, following the subterranean slope, they emerge here at our feet. But they come forth heavily charged with lime, which accounts for both the wondrous blue color and the lurking doom. Our Havasupai brothers are short-lived, and nearly all of them die from causes brought on by this superabundance of lime in the water which they drink. The entire tribe numbers about two hundred and fifty souls, and the death-rate is much larger than the birth-rate. The exact figures were given me at the time, but I failed to note them down. My impression is, however, that in the twelve months preceding there had been only three births in the entire tribe.

The United States Government maintains a sort of branch agency here at the reservation, with a post-office (Supai) and three employees,—a school-teacher, a farmer,

and a teacher of domestic economy. J. H. Bratley, Charles Bushnell, and Miss Lou Goenawein held these offices, respectively, on the occasion of our visit, but before we left H. P. Ewing came into the cañon by way of the Hualapai trail, bringing with him Horace P. Wilson, who was to succeed Mr. Bratley as school-teacher. Mr. Ewing was at that time superintendent of both the Hualapai and Havasupai tribes, with headquarters at Truxton, Arizona. Mr. Bushnell, the farmer, was also preparing to take his departure, as his health had been seriously undermined by drinking the lime-charged water.

I have spoken of the Hualapai (or Walapai) trail. This is the only other means of access to the Supai villages. It comes in from the Hualapai reservation to the southwest, and I am told that it is in its way quite as rough and interesting as the trail by which we entered. (Illustration 1.) The mail goes in and out by this trail, and is carried by Indian riders. The Hualapai Indians are cousins to the Havasupais, though they have little to do with each other. One Hualapai, and one only, had married into the Havasupai tribe. He was a fat, good-natured fellow, but his life was something of a burden, for if anything went wrong in the tribe,—if a horse was poisoned or an orchard robbed,—the Hualapai was held responsible.

The Havasupai Indian, though not descended from the prehistoric cliff-dwellers, is troglodytic. He lives at will in the hogans, or brush huts, in the level bed of the cañon, on the land which he owns and cultivates, or, if the season of the year or some other exigency impels him, he moves with his family and household goods up the talus on either side of the gorge, and makes his abode in deep embrasures in the sandstone. (Illustration 3.)

For a stretch of three miles, beginning at the agency buildings, one sees these cliff-dwellings above the talus as one rides in and out among the orchards and willows,



ILLUSTRATION 3.—HAVASUPAI CLIFF-DWELLING AND FAMILY CACHE.
From a photograph by William A. Brewer.



ILLUSTRATION 4.—HAVASUPAI CACHE, CATARACT CAÑON.
From a photograph by William A. Brewer.

or through the sandy but fertile fields that skirt the river. There are few actual cliff-dwellers to be found elsewhere in the United States, and I venture to say that the sight which I am describing is absolutely unique. Through all this country one comes upon the ancient granaries and cliff-dwellings, but they are desolate. Here, however, one sees these quaint and picturesque structures instinct with life. The children play and chatter in the sun, the squaws, in their bright-colored calicoes, move lazily about, while the lord and master, perched upon a rock, smokes his corncob pipe and stolidly contemplates the tenderfoot intruders.

Every family has at least one granary, or cache, and these (resembling huge beehives in appearance) are interspersed at random among the cliff-dwellings. In illustration 3 the cache may be seen in the center of the family home. In Illustration 4 we have a typical cache, which was at a distance from any Indian habitation, and probably near the field whose harvest it contained. In general I noted that the dwellings were to be found in the western wall of the cañon and the caches in the eastern wall. A cache is usually square, averaging perhaps ten feet by five in size, and is built of stone, liberally cemented with mud made of sandstone dust. Logs are placed upon the tops and the interstices filled in with the same mortar. The entrance is square, and is just large enough to admit the body of a squaw. In the harvest season she brings thither the corn, sunflower-seeds, squash-seeds, dried apricots, dried peaches, mescal, etc., and after all have been carefully deposited within, the entrance is filled with a square block of sandstone, and the whole sealed with a remarkably strong cement, made largely of bat's-dung, gathered from the clefts of the rocks. Before the cement has hardened the squaw marks it with her seal. In this instance (Illustration 4) the seal may be seen, though

indistinctly, at the lower part of the cement covering, and consists of the careful impression of the fore part of the squaw's left foot. Higher up, and on either side, one may see corn-husks, fastened into the cement and tied into knots that have definite significance. Above is a shred of red bandana handkerchief, which also tells its story to any wandering Indian that may come that way. Later in the year the cache is opened, and its store is used as the family needs demand.

I have said enough to show that the Havasupai Indian is a good farmer and well-skilled in irrigation. He doubtless learned much from John D. Lee, who, a fugitive from justice, spent two or three years in the cañon in the early seventies. Later he was captured and executed for complicity in the Mountain Meadows massacre. The squaws work in the fields, frequently carrying their naked children about with them while at work cultivating. But time will not permit me to speak of the many and interesting features of their life,—of their mescal pits, their basketry, their sweat-houses, their funeral customs, their tribal government, and so on. Moreover, a description of these things should come from the pen of a trained observer, rather than from that of a chance visitor.

In the frontispiece are shown two fine pillars of red sandstone, which the Supais reverence as gods. In their tongue they are called *Wig-li-i-wa*. Superstition has it that these gods—one male and the other female—get down from their bases at will and move about.

In conclusion, I should like to say something about the falls. There are five of them, the first of which (Havasupai Falls) are to be seen just below the villages and about three miles from the schoolhouse. About half a mile farther down we see the Navaho Falls. But both of these, though beautiful, give but a faint idea of the transcendent glory of the plunge that the waters make below, over the



ILLUSTRATION 5.—BRIDAL VEIL FALLS, CATARACT CAÑON.

From a photograph by F. H. Maude.

Bridal Veil cliff of limestone. (Illustration 5.) Tourists pronounce it the most beautiful waterfall in the world. Cushing says, "It is useless to try to paint these falls with their crown of perennial verdure, their three hundred feet of crystal glory, their footstools of eternal circling rainbows, which sink far into the clear green depths of the fathomless pools, or rise on the clouds of mist, and turn to ashes and lime on the leaves of the trees around them."

We reached the foot of these falls by way of the steep, rocky path down Miner's (or Crematory) Gulch, leaving our horses on the cliff above; and while I gazed upon the superb, ever-changing lacework of this entrancing cataract my guide touched me upon the arm and bade me start for Mooney Falls if I would reach camp by nightfall. But I could not leave; and the time allotted to the falls below I gave to the scene before me. For that reason I cannot describe Mooney Falls to my readers, or the seldom-visited Beaver Falls, still further down the river. These, with the tragic story of Mooney's death-plunge, must be left for some other occasion or some worthier pen.

MY TRIP TO KING'S RIVER CAÑON.*

BY DR. JOSEPH LE CONTE.

From time to time, the yearning for camp-life and mountain scenery comes upon me and must be satisfied. Thus was it with me in the early days of June last. I had already camped many times in the High Sierra. I had explored all the famous regions from Yosemite northward; but I had not yet visited the finest of all,—viz., the King's River Cañon and the lofty peaks in that vicinity. My camping days cannot last much longer. I must see this region before I give up entirely; and it must, I suppose, be now or never. Every camping trip heretofore has been a renewal of my life. From every contact with Mother Earth, Antæus-like, I have risen refreshed and invigorated. The longing for open-air life and mountain glory, for roaring cataract and leaping fall, was again upon me. So, in spite of warnings of friends that the trip would be too hard for me, I determined to try once more.

I have just returned (July 20, 1900) from a six-weeks' camp with my son, J. N. LeConte, in the cañon, up Bubb's Creek, and onward to the crest of the Sierra at Kearsarge Pass, 12,000 feet above sea-level. My expectations have been more than realized. My health has been absolutely perfect. I enjoyed intensely every step of the journey, and in some parts, as we approached the summit, the exhilaration of spirit and exultation of mind was such as I

* Reprinted by permission from *Sunset*, October, 1900.

had not felt before for ten years. I *felt* as if I could climb the highest peaks, but, of course, I knew better than to try anything so foolish. I left that to the younger members of the party. I only went where my horse could carry me.

Our party consisted of four,—my son and myself, my daughter, Mrs. Furman, and Miss Helen Gompertz,—just the ideal number and the ideal constitution of a camping party. The drudgery was fairly divided. The wood-gathering, firing, and attending to horses and mules was undertaken by my son, the cooking, etc., by the ladies, while I was regarded as the guest of the party. Nowhere more than in camp does true womanly refinement show itself. In spite of the unfavorable conditions, our ladies never wholly lost that neatness and tidiness so dear to the heart of every true woman.

We started from Berkeley June 7th, 8:30 A. M., and reached Sanger the same day, 5 P. M. By special arrangement previously made we immediately took a night stage for Millwood. Stopping four or five hours at Dunlap's for rest and sleep and breakfast, we reached Millwood about 11 A. M. of the 8th, and started on the trail the same day. By this arrangement we gained one full day, and also avoided both the heat of the stage ride by day and the annoyance of a stay over night at Sanger and again at Millwood.

After some delay in getting things together, in packing and changing civilized clothing for "camp duds," we got off about 4 P. M.—my son Joe and Helen on foot and leading the two pack-mules, and my daughter and myself on horseback. Starting so late, our first day's journey was purely nominal—only to get away from the busy haunts of men to the peace of nature—from the heat and dust and turmoil of traffic to coolness and cleanness of forests. We, therefore, went only three miles and

camped. From Millwood to our camp in the cañon is about thirty-five miles. The usual time for pack-trains is two days. We were four days on the trail. We were detained every day by an afternoon thunder-storm and hail. I was not sorry for this, as it compelled easy stages and did not at all interfere with open-air sleeping. A small "A" tent protected our provisions, bedding and ourselves during the storm, which never lasted more than an hour or two and left the air fresher and the scenery more beautiful. Only once did we attempt to go on in the afternoon, and then we all got drenched. But he is no camper whose spirit does not rise with every discomfort and difficulty. That very evening was to me perhaps the most hilarious of the whole trip. As usual, nobody was any the worse for the soaking.

On the second day we passed through the Big Tree Grove, and here we had a striking object lesson on the necessity of reservations. The outskirts of the original grove was a scene of horrible desolation, ruin, and ugliness. The ground was strewn with the mangled remains of once grand sequoias—each one the growth of thousands of years. It was literally a slaughter-pen. As we passed on, next came the reservation line, and suddenly, as if by magic, all is beauty and grandeur and delight. I know that much may be said in justification of such butchery. It is true that forests were made for man, not man for forests; it is true that trees are for human use. But there are æsthetic uses as well as commercial uses—uses for the spiritual wealth of all, as well as for the material wealth of some. It may be, indeed, that commercial uses must take precedence of all other uses; but even here is a rational as well as a wasteful use, a use not only for now, but for all time; not for this generation only, but for all generations. The forests are the property of the nation. Generation after generation passes, but the

national life continues. As the wise man differs from the fool chiefly in thoughtful provision for the future, so a nation is wise in proportion as it husband its resources, and uses them in such wise as to continue and increase them. Like the prodigal son, the nation has wasted his substance in riotous living, careless of the future, and only now, when nearly all is spent, is coming to himself and recognizing that trees also are a crop worth cultivating.

The Big Trees here do not occur in isolated groves consisting mainly of this species alone—as in Mariposa and Calaveras—but are more scattered among other competing species of conifers. But they are everywhere easily recognized by their smooth, brownish yellow, nearly cylindrical trunks, limbless for one hundred to one hundred and fifty feet. Some of them in this grove are magnificent specimens. The General Grant is, I think, the finest I have yet seen. It is certainly far more perfect, and probably larger, too, than the Grizzly Giant of Mariposa. We find abundant evidence here that the species is not dying out, as many suppose, but is still vigorous and successfully holding its own in the struggle for life with other species. Trees of all sizes and ages, from sprouting seedlings, vigorous saplings, stately monarchs, and decaying giants are seen on every side. It is true that at one time, several millions of years ago, sequoias were far more abundant and diversified in species than they are now (more than fifty fossil species are known) and also far more widely diffused (they prevailed at that time all over the northern parts of North America and Eurasia). It is true that during the glacial period they were pushed southward by the rigor of the climate far beyond their natural limits and all the species destroyed except two, and that these two on the retreat of the ice-sheet were left stranded here in California alone—the Big Trees on the slopes of the Sierra and the Redwood

on the Coast Range. It is true, therefore, that they are a mere remnant of what they were, and it is this, indeed, that invests them with so peculiar an interest; but where conditions are favorable they yet have every appearance of abounding vitality. Geologically, they may be called a dying species, as are also the Liquidambar and the Liriodendron of the East, but surely not in any sense of human chronology.

On the third day we got our first really fine view of some of the highest peaks—Mt. Gardiner, 14,000 feet high; Mt. King, less lofty, but whose Matterhorn-like peak defied the utmost efforts of the climber, until overcome last year by Prof. Brown of Stanford; and far beyond these, on the very crest of the range, the sharp, jagged, pinnacled, splintered peaks of the Palisades, the roughest, the most unexplored, and therefore the most enticing, region in all the Sierra.

On the fourth day we nooned at Summit Meadow, only a mile from the margin of the cañon, and could easily have pushed on and reached Fox, at the bottom of the cañon, that afternoon; but our King's River camp was six miles up the cañon—a long ride. Besides, there was the usual thunder-shower in the afternoon; so we determined to camp here and make an early start next morning and reach final camp by noon next day. After the storm we walked to the verge of the cañon and took our first view—a sunset view—both of the cañon itself and of the surrounding peaks, the goal of our desires. Barring the wonderful falls, the view will compare well with that of Yosemite from Inspiration Point or Eagle Point. Next day, down, down, back and forth, zigzag, 3,500 feet descent in three or four miles, to the floor of the valley. Here we found several houses, now deserted, and a rough and very precarious-looking suspension bridge across the river, put up by Mr. Fox of Millwood. After a little

refreshment, and especially drinking deeply of the delicious water of the river, we crossed, one by one, the bridge, and easily reached our camp, six miles farther, by noon. The afternoon hail-storms continued two days after we reached camp, but after that the serenity was perfect all the time.

Our permanent camp, selected by Joe, was in a thick grove of pines on the very banks of the river and immediately beneath the highest peak—"Grand Sentinel"—of the walls of the cañon. This wonderful peak rises an almost sheer, vertical precipice 3,500 feet above the river. There is nothing in Yosemite finer.

Prof. Magee and his party had occupied our camp until a few days previously, when he moved up the cañon about one and a half miles. They left it in a neat condition, "swept and garnished," with rough table and seats and many other conveniences of which we were glad to avail ourselves. The river, swift everywhere, became, just below our camp, a roaring, foaming cascade which, by day, charmed us with its ever-changing form, and, by night, lulled us into deeper and sweeter sleep. In this delightful place we remained two weeks. It would have been tedious for the younger members of the party to have remained inactive so long. Every day or two they went off on some excursion while I kept camp. Sometimes they climbed half-way up the north wall in order to get a fine view of the more picturesque south wall. Sometimes they climbed the highest points of the south wall,—for, e. g., "Grand Sentinel," 3,500 feet. Sometimes they took longer trips, as, for example, to top of Goat Mountain, from which is obtained a magnificent view of the High Sierra. Sometimes they explored Paradise Cañon, the northern fork of King's River. These excursions would occupy sometimes a day, sometimes several days. Meanwhile I was left alone to struggle with the environment.

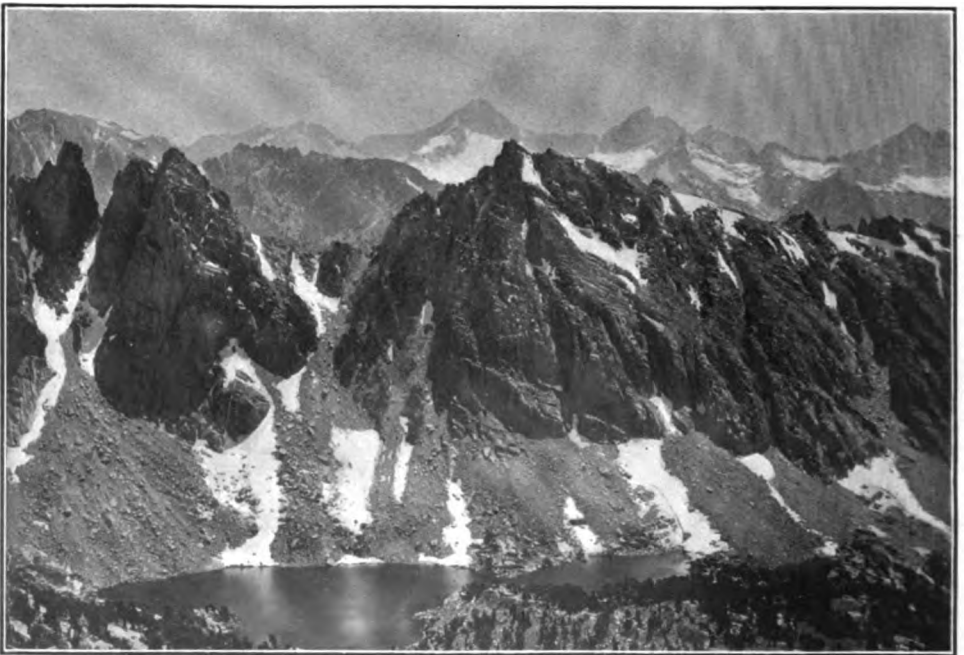
This was no hardship to me. To be alone with grand nature is no solitude. Sometimes I strolled down to the cascade just below the camp, or to the falls of Granite Creek, and would sit for hours studying the rock structure of this region and trying to solve the problem of the origin of the cañon, or else merely musing, day-dreaming, or even dozing, but always taking in great health-giving draughts of pure air and bright sunshine. Sometimes I strolled up the cañon and visited other camps—the Magees, the Hathaways, the Kanawyers. Often my daughter stayed with me. Then we took longer walks, or else took the opportunity to bake a fine batch of biscuits for the more adventurous when they returned.

At the end of two weeks we pushed on up the main cañon to the forks, then up the eastern branch—Bubb's Creek—and still onward to the crest at Kearsarge Pass, 12,000 feet above sea-level. The trail up Bubb's Creek Cañon is very steep and rough. I feared that the day's ride would severely test my strength, but, on the contrary, the scenery was so grand, and becoming grander at every step, the air so stimulating and cool, the continuous roaring cascade so exhilarating, that I was actually fresher at the end than at the start. Such is the influence of mind over body. Prof. Magee and his party had preceded us by three or four days, and now awaited us in a beautiful camp just below the falls of Bubb's Creek. They welcomed us with shouts, and also more substantially with abundance of delicious trout for dinner. We camped with them that night and the next forenoon, and they went on with us in the afternoon of the 28th. The distance to Kearsarge Pass is only about ten miles, but the grade is very steep and the trail very rough. We therefore took it by very easy stages, stopping over night at "Vidette Meadow," a beautiful place overlooked by the two splendid peaks, North and South Vidette. Next



VIEW FROM KEARSARGE PASS.
From a photograph by J. N. Le Conte.

By permission of *Snood*.



MT. BREWER FROM BULLFROG LAKE.
From a photograph by J. N. Le Conte.

By permission of *Snood*.

day we easily reached Bullfrog Lake, and made camp within a mile or two of Kearsarge Pass.

On the whole way up Bubb's Creek to Kearsarge Pass the trail becomes steeper and rougher, cascades and falls more frequent and more beautiful, and the scenery grander and more impressive, until finally, as we approached the summit, I could not refrain from screaming with delight. The mountain splendor reached its climax at "Bullfrog Lake" (a most unromantic and inappropriate name, but a glorious place). After making camp and a hasty lunch here, we went on with Professor and Mrs. Magee about two miles to the Pass, about 12,000 feet above sea-level. Here on the bare rock (for it is above timber line), on the sharp knife-edge of the Pass, with barely standing-room for two or three persons, in the midst of an unrivaled panoramic view, with the eastern plains spread out as a map 8,000 feet below, and only ten miles distant, and the highest peaks of the Sierra standing about us as silent witnesses, we took leave—somewhat dramatic leave—of Prof. Magee and his party, they going down by steep grade to Independence, and we back two miles to our camp on Bullfrog Lake. We watched their diminishing forms as they descended the steep grade, winding slowly around a little frozen, glacial lake nestled in a rock-basin immediately below us, almost at our feet, until they disappeared from view, then turned regretfully about and descended to our camp.

At this beautiful place—the most beautiful I have yet seen in the Sierra—we camped nearly a week. The lake, 11,000 feet above sea-level, stands in an amphitheater completely surrounded by the highest peaks of this the most alpine portion of the Sierra. On the east, the sharp, jagged, castellated, pinnacled, splintered peaks of Kearsarge; then going round southward, the symmetric, conical, towering form of University Peak, 14,000 feet high,

then Stanford Peak equally lofty, and Mt. Keith still loftier, 14,200 feet, then the fine outlines of the Videttes; then southwestward the grand, massive form of Mt. Brewer with its great cirque filled with snow, from which emerges a fine glacier. On the northwest Charlotte Peak, with Charlotte Lake at its foot, and all the fine peaks of the Sierra in panoramic view from its summit. Several of these peaks—Charlotte Peak, Mt. Keith, etc.—were ascended by the younger members of our party, while I kept camp and strolled around the lake enjoying the incomparable scenery.

About July 4th, we started back, stopping a few days at our previous camp at Vidette Meadow, visiting the beautiful falls at this point, and climbing some of the neighboring peaks, and then returned to our camp in King's River Cañon, July 9th, after an absence of two weeks. These two weeks were the most delightful of our whole trip. I could not have imagined that I could still enjoy anything so much. I felt an exhilaration of spirit such as I did not believe possible. It was a real renewal of my vitality, and to some degree of my youth.

Such is a brief account of the trip—too brief, I fear, to bring out the real spirit of camp life. But there are some points on which I must dwell a little more. The reader will naturally ask, "How does King's River compare with Yosemite as to origin, as to beauty, and as to the pleasures of camp life?"

1. *Origin*.—There can be no doubt that King's River Cañon belongs to the same type as Yosemite and Hetch-hetchy. They are all Yosemitees,—i. e. valleys with vertical walls and flat floors, as contrasted with the usual V-shaped valleys of mountains generally. In King's River the walls are equally high and equally vertical, and the floor similarly, although not equally, flat. In both cases, too, the exceptional verticality is due to a similar rock-

structure, viz., a vertical rock-jointing or rough rock-cleavage, characteristic of the granite in these regions, and even more conspicuous about King's River than at Yosemite. The concentric, onion-like structure which determines the domes is seen here also, as in Yosemite, although the resulting domes are not so numerous and symmetric. In both cases the main cañon divides into two great branches—the Tenaya and the Vernal-Nevada branches in the one case, and Bubb's Creek and Paradise Cañons in the other. In both cases, too, the grandeur of the cliffs reaches a climax just where the main cañon and the branches meet. In both cases the marks of glacial occupancy are visible, but these are far more conspicuous and on a grander scale in King's River. There can be no doubt, therefore, that the origin or mode of formation of these cañons is the same. For my views on this much-discussed subject I must refer the reader to an article entitled, "Transverse Mountain Valleys," etc., in the *University Chronicle* for December, 1898. To discuss it here would carry us much too far afield.

2. *Scenic Beauty*.—Doubtless, for aggregation of striking features within a limited area, and especially for the splendor of its many waterfalls, Yosemite stands unrivaled, not only in California, but in the world. But there is a peculiar, though gentler charm, also, in the foaming rapids so characteristic of King's River and its branches. If Yosemite is far superior in its falls, and also in its extensive meadows and the variety of its foliage, King's River is far superior in its surrounding mountain scenery. King's River Cañon branches and re-branches, becoming deeper and wider and grander until it deploys and loses itself among the highest peaks and grandest scenery of the Sierra. Taking one typical example from each region, the scenery about Tuolumne Meadows is not to be compared to that about Bullfrog Lake.

3. *Healthfulness.*—In this regard I believe the King's River Cañon is much superior, because it is drier. The fall of the Merced River in the Yosemite proper is only about eight feet in as many miles. In the same distance the King's River falls about five hundred feet. I have always been perfectly healthy in camp, but it seems to me I was especially so in this camp.

4. *Pleasures of Camp Life.*—The true camping party is sufficient unto itself. The camp life is a complete contrast with the conventional life. Its delight consists in being for a time away from the busy haunts of men and alone with untamed nature. The true camper prefers that there be no other party near. Other campers, a mile or so off, and an occasional visit, if they are good campers, are well enough, and even, perhaps, increases the pleasure, but are not necessary. In this I need hardly say King's River is infinitely superior; nature there has not yet been defiled by the presence of man. In early days, when I first visited it,—i. e. in '70 and '72, when you could not get into it except by trail,—Yosemite, too, was pure and undefiled, but now it is overrun with tourists and sophisticated with conventional fashions. In King's River, and especially in Bubb's Creek Cañon and Bullfrog Lake, we find only absolute nature, unmodified except by the roughest trails possible for mules. Both in healthfulness and in the delights of solitary companionship with grand nature the King's River region is now the ideal camping-ground.

5. *Game and Fish.*—But many men go into camp mainly for hunting and fishing. I fully sympathize with this passion, for I too have been a "mighty hunter" in my time. I now enjoy the mountain scenery more, although I confess that the fruits of the hunting and fishing are not without a certain charm when suitably prepared and served. For those fond of fish and game (and who

are not?) King's River is the place. Hunting is, of course, forbidden in Yosemite, and properly so. Fishing is allowed, "catch who catch can," but I confess I never could catch any. They are scarce and shy. But in King's River region the mountains are full of grouse and mountain quail, and the streams abound in trout. Although not seeking them at all, my son got ten grouse. Again, although we spent little time in fishing, we had all the trout we wanted. They were especially abundant and fine as we went towards the head-waters,—i. e. in Bubb's Creek, and especially in the little streams running into Bullfrog Lake from the melting snows of the summit peaks. Nor was big game wanting. Without turning at all out of our way we saw both deer and bear, but brought home no trophies of buckhorn or bearskin. The ladies, however, had their trophies in the way of six or seven rattlesnake-skins, of which they will make ornamental belts.

CONIFERS OF THE PACIFIC SLOPE.**HOW TO DISTINGUISH THEM.**

BY JOHN G. LEMMON.

No. III.

Our first number treated of the general classifications of the great Order of Coniferæ, followed by groupings and descriptions of the largest subtribe, *THE FASCICULARS*,—trees having their leaves in fascicles, or little bundles. It comprises the Pine, *Larix*, and true Cedar families, composing over one third of the cone-bearing trees.

The second article continued the classification, grouping and describing the other subtribe of Northern pitch-trees, —*THE SOLITARES*,—trees with leaves solitary and very short, comprising the Spruce, Hemlock, and true Fir families. This group was followed by a discussion of the *TAXODIADS*, the cypress-like trees of both hemispheres having, generally, small scales for leaves, but they, as well as the cone-scales, are spirally arranged. They include our world-famous Redwoods.

There remains to be described in this paper the third and last major group—

**DIVISION II. — *CYCLALES* — *THE WHORL-
CONE TREES* — *CYPRESSES* AND *THEIR
ALLIES*.**

Unlike the preceding trees, which have spiral development of their organs,—i. e. their leaves and bracts arise in spirals about the branchlets, the cone-scales being sim-

ilarly coiled about the cone-axis from base to apex,—these whorl-cone trees have their foliar and fruit organs arranged either in pairs, and so opposite, or they are in threes, and so are in whorls, or circles. Also, the leaves are very small and scalelike; the cones are small, oblong, or globose; the scales valvate or peltate, or club-shaped.

The Cypresses comprise in America, two pairs of closely allied genera.

FIRST PAIR.—American Cedars, with cones oblong or elliptical, and scales flat and convex; branchlets fanlike in their arrangement; leaves in pairs of two forms and decurrent.

1. **Thuya.**—Fertile cone-scales six, unequal, thin.

2. **Libocedrus.**—Fertile cone-scales two, equal, thick.

SECOND PAIR.—The Cypresses, with cones globose, the scales very thick, obpyramidal, and peltate, or club-shaped; leaves in pairs, two-ranked.

1. **Chamaecyparis.**—Branchlets pinnate and fanlike; cones maturing in one season; seeds few and winged.

2. **Cupressus.**—Branchlets, scattered; cones larger, maturing in two seasons; seeds numerous and wingless.

SLOW GROWTH OF THE CYPRESSES.

The celebrated botanist Michaux wrote of the Cypress: "The concentric rings are more compressed near the center, an arrangement that is contrary to that observed in the oak, maple, ash," etc., a statement which is not quite correctly stated, since the annual layers, which he calls "rings," are not "compressed near the center," but are simply formed in thinner layers in these trees while young than in the broad-leaved trees. It may be stated in this connection that, in general, for a series of years a tree increases both in amount of foliage and size of trunk;

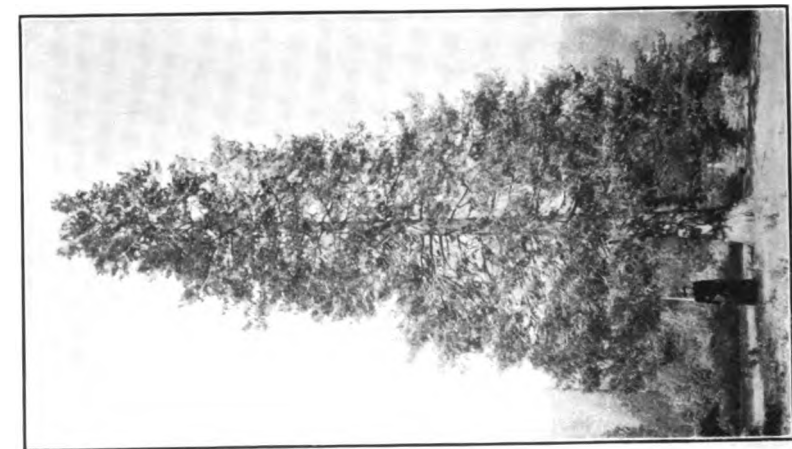
hence during this period the equality of thickness is maintained. Trees in a forest, however, usually have to dispose of their lower limbs,—they are not “tolerated,” or the tree needs their quota of sustenance, to be applied to the upper, aspiring limbs, which are borne as a crown, rising higher and higher, while the trunk must increase in strength to resist the wind; but the annual output of woody fiber must be spread over a larger surface, and consequently must be thinner—an important consideration to the lumber manufacturers.

When age and decrepitude ensue, the foliage and lignum are still further reduced, and, as in the case of our aged, storm-beaten Monterey Cypress, and the snow-laden Juniper of the High Sierra, they often show but a few green twigs annually, the annual layers being discoverable only with a magnifier. And often another peculiarity occurs: In the economy of the tree it is only found possible to supply the new material to the surface of a few ribs, connecting certain large roots to certain large limbs, thus completely changing the appearance of the tree, rendering it a fluted column.

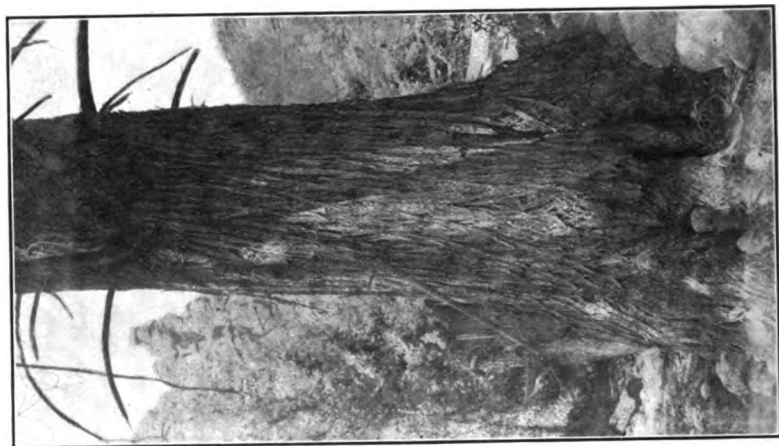
FIRST PAIR.—AMERICAN CEDARS.

TREES WITH OBLONG FIBROUS (NOT WOODED) CONES.

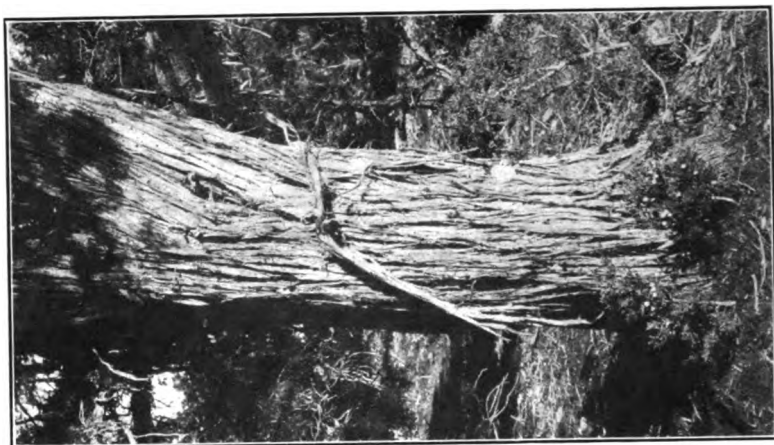
1. *Thúya* (the Arbor-vitæ trees).—The name of this genus is of ancient Greek origin, meaning fragrant gum or resin, and it is spelled variously, Thuja, Thuia, and Thuya. As the letters *j* and *i* are sounded like *y*, it is quite as well to spell the name *Thúya*. The Latin words “Arbor-vitæ” refer to their resemblance to the appearance observed in cutting the human cerebellum through in a vertical direction. This distinction early separated them from the rest of the Cypresses, and later these were again separated into genera, leaving but a few species under this name.



INCENSE CEDAR.
Libocedrus decurrens, Torrey.
From a photograph by J. G. Lemmon.



BONITO CYPRESS.
Cupressus Arizona, Greene; var. *Bonito*,
Lemmon.
From a photograph by J. G. Lemmon.



COSNINO JUNIPER.
Juniperus Cosnino, Lemmon.
From a photograph by J. G. Lemmon.

Of American species, one is indigenous to the Eastern States from New Brunswick down along the Alleghany Mountains to North Carolina, and westward to Michigan. The Western species (*Th. plicata*, Lam.) inhabits the coast region from Alaska southward to Cape Mendocino, and the cross-ranges eastward to the western slope of the Rocky Mountains.

These two regions nowhere approach each other nearer than a thousand or fifteen hundred miles, but the differences between them are so slight that Robert Brown conjectured that perhaps the separation has been recent.

"There lies something deeper behind this dispersion," he remarked, "than we yet understand, and it really seems sometimes that a species may stretch to the utmost bounds of its range, cross over, and take new characters to suit the new climate and physical circumstances to which it is subjected, and here in the new position change characters to suit necessities, and form a new race. The want of stragglers all the way over [he continues] seems to militate against this theory" and he would fain support his position by assuming "the great central regions of America, like the center of all continents, now too dry for the growth of trees, may not have always been so." And he cited the remarkable resemblance that subsists between half a dozen species in each of these divisions, scarce a prominent Atlantic species of conifer but has its Pacific "analogue"; but the Pacific region has by far the most lines of development present and unmatched, as in most of the Pines and Firs, and, most notable, the two giant Redwoods,—nothing like them being found elsewhere on the earth.

The Eastern species (*Th. occidentalis*) forms the major part of the cedar swamps of that region. The tree usually tapers from a swollen base of large size to a point at no great height, the limbs wide apart and spring-

ing out at right angles from the body, each with drooping, sweeping branches. The white bark has gained for it the name of White Cedar, but the wood is reddish, and the better name is Atlantic Red Cedar. It is often called *Arbor-vitæ*; but that name better be reserved for the little compact Chinese trees, the *Biota*, with flattened, vertical branchlets, and which are found so often in cultivation as rounded clumps in our yards and parks.

1. **Pacific Red Cedar, Giant Arbor-vitæ** (*Th. plicata*, Lambert; *Th. gigantea*, Nuttall).—This is the Pacific analogue of the Eastern species, and for a long time was confounded with it; but it is found to be specifically separated in many respects, particularly in its enormous size, trees around the Puget Sound often attaining a height of one hundred and fifty feet with a diameter of ten to twenty feet.

With headquarters in the low, rich woods and swamps of the Washington coast, it extends northward to the islands of Alaska, and southward to Cape Mendocino. In British Columbia it forms a great part of the forest, dividing the privileges of the great rainfall there with the big Tideland Spruce, described in a former paper. It follows along on the wet spots of the northern cross-ranges through Northern Idaho and Montana to the western slopes of the Rocky Mountains, where at high elevations it becomes dwarfed and was there mistaken for the Eastern species. In its headquarters around Puget Sound, may be found trees of magnificent proportions, straight, tapering, tall, with the upper third clothed with bright green foliage.

A noted tree a few miles south from Seattle was utilized by the Hudson Bay Company in the early days of Western occupation for a telegraph pole, and until the discovery of the giant Sequoias later, this tree was doubtless the larg-

est telegraph pole in the world,—being over fifteen feet thick at the base.

The limbs of the *Thúya*, with two-ranked branchlets, forming horizontal sprays of fanlike foliage, and other characters of the species, cause it to be mistaken for the next tree to be described,—*Libocédrus*,—and in descriptions by early explorers the two trees were often confounded, but for certain identification reliance may be placed on the characters of the fruit. The cones of this Red Cedar are small,—scarce a half-inch long at maturity,—turning upward from the edges of the sprays of foliage; the thin scales are much alike, except that the six central ones are larger, bearing the seeds; also the range of the two trees is totally different, the Incense (or Post) Cedar being confined to higher and dryer localities of Southern Oregon and throughout California.

“As a useful tree,” wrote Robert Brown, “it stands pre-eminent in the Northwest for its use as a shingle-tree, vast quantities being manufactured annually. The aborigines prized it very highly. They used this light, soft timber in many ways,—for canoes, walls for their lodges, for troughs, bowls, etc., while from the strong bark they make clothing, mats, and blankets. Their lodges were thatched with this material. . . . Nothing so thoroughly expresses the enormous size of the tree, its lightness and durability,” continues Mr. Brown, “than to see the large war canoes which the Indians fashion out of their trunks, often forty to sixty feet long, and holding forty to fifty warriors.”

In preparing to cut down one of these large trees, our modern lumberman, who does not desire the hollow lower portion, cuts notches in the sides for his feet in climbing, then at a point above “the swell” he digs a square hole to a depth of a few inches, in which he inserts the narrowed end of a stout plank, shod with a strong, curved

iron shoe, that, when the plank is depressed, grips into the tree and makes a firm and safe footing for the workman.

The timber of this gigantic cedar is well-nigh indestructible in contact with water, as remarkably exhibited at Shoalwater Bay on the coast of Oregon, where submerged trees of this species are standing in groves whose ages must compass many centuries. They are known to be identical with existing species, the nearest trees being the same. The slow sinking of the coast seems to be still proceeding, the tide rising higher and higher from decade to decade, killing the trees which remain perfectly sound, the uncovered portion becoming well-seasoned and of great economical value.

The shingle industry of the Northwest, with its scores of manufactories, employing thousands of workmen, and yielding millions upon millions of revenue annually, is derived from this rare local tree.

2. **Incense Cedar, Post Cedar** (*Libocédrus decurrens*, Torr.).—One of the most beautiful trees in California, especially along the western slope of the Sierra. Usually found in open situations, where, preserving every limb in health, it forms a perfect cone of verdure (as on the floor of Yosemite Valley), but in forests, where it must divest itself of its lowest limbs, it rises in a smooth yellowish or whitish column, one hundred to one hundred and fifty feet, with a diameter at base of four to six feet. The limbs, quite numerous in youth, bear their branchlets in two ranks, making flat, almost horizontal sprays of dark-green foliage. The cones are about the size of a child's thimble, and are pendent from the side pinnæ of the principal branchlets. They are long-oval, about an inch long, composed of three pairs of very unequal scales, the lower short and sterile (often absent), the mucro, or point, resembling a spur, the middle pair greatly developed and expanded to the full length of the cone, thickened so as

to form the greater part of the cone, and bearing on their inner faces the four seeds, a pair on each scale. The pairs of seeds, each with two wings, are separated from each other by a septum, or partition, composed of the third pair of scales greatly modified and sterile, with their edges in contact—forming the partition. Surmounting all, at the apex of the cone there is a pointed vestige of the fourth pair of scales.

The seeds are oblong, four to six lines long, unequally two-winged, the outer wing but little longer than the seed, the inner broad and long, nearly equaling the scale.

The branchlets are at first flattened horizontally and clothed with small scalelike, pointed leaves, their bases prolonged downwards suggesting the specific name (*decurrens*), the alternate pairs of scales smaller, their bases half-concealed.

The male flowers, numerous, and terminating the branchlets, are ovate, three to four lines long, yellowish and composed of twelve to sixteen scales, with four globular anthers beneath each.

The geographical center of the Incense Cedar, is in Central California, on the western slope of the Sierra Nevada, thence extending to Southern Oregon and southward to near the Mexican line. In the Sierra it flourishes at elevations of 4,000 to 6,000 feet, in Oregon a thousand feet lower, in Southern California as much higher, everywhere preferring dry, open situations for the display of its graceful spires of dark-green verdure. It never crowds other trees, nor is it set closely in a forest, it being one of the intolerant trees.

Though very valuable in its best estate, the timber is often attacked by a fungus, called "dry rot," that enters the tree from the roots. It attacks the cell contents of the wood and kills large sections in rounded masses, reducing the wood to brown, powdered, cinderlike refuse, disposed

in long chains, often from base to top. Trees affected by "dry rot" lose the bright appearance of the bark, which becomes reddish and dingy, giving notice to the timber-cutter of its porous condition. The timber splits readily, and sound trees make excellent finishing lumber. Variegated boards made of the dark-red heart-wood, bordered with a stripe of the white sap-wood, being a great favorite for ceilings, wainscoting, and cabinet-work.

Every part of the tree is aromatic, the timber so pungent that a shaving chewed will seriously affect the mouth, like a burning fluid. Upon the slightest abrasion or application of working-tools, this peculiar cedar gives off a delightful perfume, which suggested the generic name of *Libocédrus*, meaning "incense cedar."

The Incense Cedar has been a great boon to the California farmer and stockman, their first improvements being largely aided by selections of cedar from the nearest forest. Trees may be split from end to end with an ax, the sections then used for fencing, which endures many years of weathering. For posts it is invaluable, being almost imperishable.

When these lovely trees are fruiting in the autumn, and their numerous yellowish-brown pendent cones are ripening, their appearance adds a charm and attraction to any landscape. In the long chain of sub-alpine valleys, beginning with Yosemite, and including Tahoe, Sierra, American, Indian, Big Meadows, and Lassen Valley, lying near the vertebræ of the Sierra, the Incense Cedar, with its graceful form and bright foliage, becomes a never-to-be-forgotten feature of the scenery.

There are three other living species of *Libocédrus*,—one in New Zealand, one in Chile, and the third in Patagonia. The researches of geologists reveal that several species existed in far northern regions during Miocene times, coeval with Sequoias, Taxodiums, Magnolias, and the

like, all seemingly of colossal proportions, like the animals of the period.

SECOND PAIR.—THE CYPRESSES.

Trees with globular or sub-globular, woody cones, the scales six to twelve, rigid, valvate, peltate, or obpyramidal. Two genera.

FLAT-BRANCHED CYPRESSES.

Very graceful northern trees; branchlets forming flat horizontal sprays of foliage, the leaves two-ranked; cones globular, very small, one-quarter to one-half inch thick, maturing in one season; scales semi-woody; seeds few, narrowly winged.

We come now to the consideration of a very ornamental group of trees composed of two families on opposite sides of the Northern Hemisphere, one genus, of ten species, in Eastern Asia, the other, of three species, in North America. No trees of other groups excel these in gracefulness of form, the branchlets carrying out the flat-branched character of other trees described, to the farthest degree of symmetrical perfection.

In open situations all the limbs are retained, diminishing gradually in size from bottom to top of the tree, which usually terminates in a slender shoot, turning at the point and swaying with every breeze. The light-green foliage of the lower branches bear their convex fans decorated on the edges with minute beadlike purple globes—becoming brown at maturity—the male flowers.

This group was taken out of the large family of *Cupressus* in 1842, on the several points of having their branchlets in two ranks, the cones maturing in a single season, the scales thin, and bearing but two or three seeds each, these being slightly winged,—leaving the True Cypress, a compact genus, with branches spirelike or plumelike, the cones requiring two seasons to complete

their growth, the scales thick, woody, and bearing numerous wingless seeds.

Some of the Old World species of True Cypress are small shrubs or trees, the pride and pets of the tree-loving Orientals of Japan and China. Many of the trees can be kept so small, by tying back the branches, that they make charming house-plants, specimens a hundred years old being but a few feet high. These little shrubs are conveniently carried about in pots or boxes, as is the custom of the mandarin, who often, upon occasion, arranges his garden in very different, not to say grotesque, forms, as the fancy dictates or custom requires.

Other species become very large trees, as the great Japan Cypress, constituting the greater part of the forest of Nippon. It often attains the height of one hundred feet. The timber is so very white, firm, aromatic, and fine-grained, that, with a brilliance under polish like satin, the Japanese prize it above all other woods, making their most valuable furniture, as well as constructing their temples and idols of it. They also—to their praise be it said—set apart certain of the striking trees, exempt them from destruction, and dedicate them to the sun-god, under the name of *Fusi-noki*—"Tree of the Sun."

AMERICAN GENUS, *Chamaecyparis*.

(Name from the Gr. *chamæ*, on the ground, and *cyparis*, the Cedar,—i. e. Ground Cedar, the first trees discovered being low, with spreading branches.)

This genus is indigenous to America, the Eastern States having one species (*Ch. thyoides*), found in cold dense forests from Maine to Mississippi. It is especially at home in the Dismal Swamp of Virginia, sharing the loose sphagnum bottom with the Bald Cypress, where, growing thickly, the shade is so dense as to preclude the sunlight, and the trees there trim themselves to a great



Thuja occidentalis
Thuja occidentalis Mill.
 From a photograph by J. G. Linné



Cupressus macrocarpa
Cupressus macrocarpa, Hartweg.
 From a photograph by J. G. Linné



Juniperus communis
Juniperus communis, L.; var. *Siberica*, Rydberg.
 From a photograph by J. G. Linné

height. Wood very fragrant, white, soft, durable, and much used in manufactures.

The forest development of the Northwest contains two species of these peculiar trees,—one northward, around Puget Sound, the other southward, and quite local.

1. **Alaska Cypress** (*Ch. Nootkatensis*, Spach.).—This species extends northward to the islands of Alaska (where it was first detected on Nootka Island, whence the name), and southward it reaches Santiam River and Mount Jefferson in Oregon. A fine grove has been found in the Olympia Mountains, and a smaller one on the south slope of Mount Rainier. At its best the Alaska Cypress becomes eighty to one hundred feet high, with a diameter of three to five feet. The branches are apt to be short and drooping, the branchlets less often horizontally flattened; the cones are larger than those of the next species, with four to six scales, which are greener and more convex, with a more prominent boss on the center of the thickened apex.

The wood is light, hard, close-grained, easily worked, durable, and of a satiny sheen under polishing tools; in color a bright, clear yellow, this fact winning for the timber often the name in commerce of "Yellow Cedar."

2. **Lawson Cypress** (*Ch. Lawsoniana*, Parl.).—Pre-eminent among ornamental trees the world over is this graceful denizen of an extremely local region of the coast of Southern Oregon, with a few trees reaching California. No tree is better known or more highly esteemed, it would appear, from the diligence with which the seeds are still collected for the Old World markets, and the abundance of its presence in our parks and pleasure-grounds.

The Lawson Cypress is distinguished at sight by its perfect conical form, the numerous limbs bordered on each side by the alternate pinnæ of branchlets, thus form-

ing the nearly horizontal, fernlike fans that so eminently characterize this tree. These branchlets, first horizontal, then slightly descending, with convex surface, exposing its bright-green foliage, decorated along the border with little royal purple globes that late in September become brown and burst into a minute burr, scattering its many seeds. The tree is distinguished from a distance by its top; the upper limbs diminishing, the tree ends in a tall, slender shoot, nodding and swaying with every movement of the air.

This family of trees may not be clipped by the pruner's shears, as happens to the True Cypress, without injury, for the half-remaining fans die back to the limb, disfiguring the tree, but the trees, on account of their dense foliage, make serviceable windbreaks; however, they are best displayed alone, with plenty of room in open ground.

Formerly the Lawson Cypress was abundant in a limited region around Coos Bay, on the southern coast of Oregon, but the lumberman's ax and forest-fires have removed most of them. The shipment of the valuable timber from the only port of the region—Port Orford—won for it the early name of "Port Orford Cedar," and the late Dr. Kellogg used to speak of it as "Ginger Pine," in allusion to the spicy fragrance of every part of the tree.

A few scattered groves are found southward along the coast until the redwood forest is met with, a few overlapping trees as far southward as Mad River, California. Eastward a few trees are found along Cow Creek, in Oregon, and the upper waters of the Sacramento, near Sisson. Trees may be seen from the rail-cars in Duns-muir Cañon, and quite a fine grove forms the Scotch Camp, twenty miles westward of Sisson's Tavern, celebrated in the early days as the resort of bear-hunters and trout-fishers.

The Lawson Cypress in the vicinity of other trees

becomes a straight, tall, limbless tree, affording excellent timber of a light cream color, with a silken gloss, and its aromatic odor, so delightful to the human sense, is offensive to insects—so for cabinets, clothes-presses, and wardrobes, etc., this tree is invaluable.

Of late almost the entire output of lumber produced by this disappearing tree is used in the manufacture of matches, and it is the spicy fragrance of our matches that at once arrests the attention of visitors.

Foreigners regard the Lawson Cypress as one of the most valuable trees introduced from the New World, as it seems to thrive in many different situations, always having a bright-green appearance, and always making a generous display of its lovely depending and decorated plumes.

TRUE CYPRESSES.

Cupressus (early Greek name of the Cypress).—After taking the above genera away from the old ante-Linnæan genus of *Cupressus*, quite a distinct and compact group of species remains, distinguished as trees and shrubs, having their branches scattered, not in two ranks; leaves very small, scalelike, opposite in pairs, and forming four ranks along the ultimate branchlets, so that they appear quadrangular; cones globose or oblong and polyhedral, of divergent obpyramidal and peltate scales, the cone requiring two seasons to complete its growth; seeds six to twenty above each scale, angular and narrowly winged; cones decidedly woody.

There are on the Pacific Slope five or six species of Cypress, three of them in California, and early discovered, the others inhabit southern regions, and were detected but a few years ago. There are two groups:—

GROUP I.—CALIFORNIA CYPRESSES.

1. **Monterey Cypress** (*C. macrocarpa*, Hartweg).—The coast-loving trees of the Monterey coast, from

Cypress Point to the south shore of Carmel Bay, and northward to Point Lobos. These are justly celebrated trees the world over. Thousands of visitors to the Pacific Slope have visited Monterey and taken the seventeen-mile drive via Pacific Grove and Cypress Point,—and a right royal treat it has been to them! For miles the well-traveled road meanders along the sandy, algæ-covered beach and through groves of these arboreal monarchs of past and conquered centuries. Great trees, forty to sixty feet high and four to seven feet in diameter, are seen, with vast depressions near them, where grew their predecessors. Deep, dark, solemn groves are penetrated where, in its best estate, the trees tower upwards grandly with their crowns of verdure. Holding the rocky points against all comers are a thin phalanx of grim warriors, disintegrating the beetling crags with their roots, while their crowns are clipped and molded into fantastic shapes by ocean storms.

The furious blasts of winter, tearing up out of the sea and meeting with the adamantine rocks, are split and separated into keen-cutting currents that plow through the first phalanx and on to the interior forest, hewing or beating down the young sprays of vegetation in their progress, shaping the foliage into platforms, benches, or exhibition shelves, now on one side, then the other, one shelf above the other to the tabular summit—as though a rounded head of solid verdure were cut through at irregular distances, and the greater portions removed.

Interior, and in all sheltered localities, the Monterey Cypress becomes one of the most symmetrical of trees. In San Francisco, and in all the communities up and down the Coast, no tree is more frequently met with under cultivation; utilized principally for windbreaks and hedges, though often for ornament.

This peculiar tree is a marked example of the great age and decrepitude to which a tree may arrive before it gives

up the struggle of life. Here and there an old hero is met with that has but a few sprays of foliage left, and such trees for many years past have consequently been putting on but thin layers of wood. And the new material is applied, not all around the trunk, but on portions connected with the live limbs; and these portions become high-raised, exceedingly crooked—the sap following the high road and leaving the rest of the trunk unfurnished.

The principal limbs behave similarly, the life-current, like a small stream in a wide river-bed, changes from side to side, causing the limbs to present sharp knees and angles, the lower limbs succumbing to fate and forming dry, hard, sharp bayonets, like *chevaux de frise* protecting a sentinel tower.

The cones of the Monterey Cypress—as might be expected from its botanical name, *macrocarpa*—are quite large, the largest of the genus, an inch to an inch and a half long, the young cones with broad foliaceous ears, or tips. The cones are often clustered near the ends of short twigs, dark green ordinarily, but often they become a shining bronze-yellow. Seeds numerous, ten to twenty to the scale, or one hundred to two hundred and fifty to the cone.

As with most plants under cultivation, the Monterey Cypress has already developed several marked varieties.

Variety *angulata*, Lemmon, is distinguished by having the scales numerous, ten to sixteen in an elongated cone, giving the cone a many-sided, hexagonal form, if composed of six pairs of scales, or polyhedral, if containing more scales.

The leaves of all the forms of Monterey Cypress differ from other Western cypresses, in being indistinctly four-ranked, so that the ultimate branchlets are nearly terete, not quadrangular, as in other species.

2. **Gowen's Cypress** (*C. Goveniana*, Gordon).—Shrubs, or small bushy trees six to ten feet high, branches spreading, and the ends pendulous; branchlets more slender than the former, the leaves smaller, thick, and without dorsal depressions; cones smaller, globular, about an inch in diameter, of six to eight scales. Sparsely found in the Coast ranges, from Mendocino to Monterey County, a fine grove on Mount Tamalpais.

3. **Pygmy Cypress** (Variety *parva*, Lemmon).—On the "White Plains," a narrow strip of poor clayey land paralleling the ocean a few miles back of the town of Mendocino, apparently the dust-dune of a former beach, is found sparsely the strangest little trees one sees outside of a Japanese garden. They are often but a few inches high, four to six inches, the cones not larger than buckshot. The little starvelings, growing close together, show but a few leaves—seemingly a mass of little purple beads upheld by shining iron wires!

4. **MacNab's Cypress** (*C. Macnabiana*, Murr.).—Shrubs or small trees, with numerous short, slender branchlets; leaves very small, deep green, or yellowish, conspicuously dotted or pitted on the back, the depression filled with a grain of resin, which becomes white; cones quite small, about one-half inch thick, scales six to eight, with thin prominent bosses, the uppermost flat, leaflike, and incurved; seeds numerous and small.

First reported by Jeffrey, from the vicinity of Mount Shasta, and later by Bolander and Purdy, from near Clear Lake. Found December, 1895, by the writer, forming a scattering grove on a ledge of blue soapstone at Magalia, a few miles east of Oroville, Butte County, California. The cones of this grove are larger,—an inch in diameter,—the large upper scale-vestiges one-quarter inch long, and strongly incurved, the leaves very small and greenish-yellow. (This may be a distinct form.)

GROUP II.—SOUTHERN CYPRESSES.

RECENTLY DISCOVERED SPECIES.

5. **Guadaloupe Cypress** (*C. Guadaloupensis*, Watson).—In 1879, Dr. Palmer found on Guadalupe Island, in the Pacific, three hundred miles off the shore of the California Peninsula, a large-fruited Cypress, which at first was taken to be a form of Monterey Cypress, but eventually Professor Watson, believing it distinct, named it as above. Since then other groves have been discovered on the mainland opposite, and along northward, to the vicinity of San Diego.

Branchlets slender, drooping; leaves light green; cones quite large. Peculiar for the behavior of the bark, the outer cortex scaling off and leaving the inner of a reddish color.

Seeds were obtained and the plants widely distributed. Beautiful trees with these characters are growing in Piedmont Park, Oakland, and Golden Gate Park, San Francisco.

6. **Arizona Cypress** (*C. Arizona*, Greene).—The next year after the above discovery (1880), Professor Greene discovered, at Clifton, near the Santa Catalina Mountains, a beautiful Cypress with nearly the same character of the shore Cypress described above. The next year (1881) the writer of these papers discovered a line of four miles of large trees following the crest of one of the highest peaks of the Chiricahua Mountains, about 11,000 feet high, in Southeastern Arizona. The trees were naked from near the bottom to the farthest limbs of the top, the branchlets stout, erect, and with large pointed leaves, forming distinct ranks of fours.

Some dendrologists regard all these forms as varieties of one species, but the maritime habit of the one, with drooping branchlets, etc., seems sufficient to distinguish

it from the high-mountain, interior species, with robust, erect branchlets and smaller fruit.

7. **Bonito Cypress** (Var. *bonito*, Lemmon).—In June of the same year (1881), the writer and his wife discovered a grove of cypress occupying a swampy location along the mouth of Bonito Creek, in the Chiricahua Mountains, about twenty miles south of Ft. Bowie. While tallying in several respects with the Arizona Cypress described, the bark of the trunks and limbs is firmly retained. On the trunks it is disposed in longitudinal ridges, divided into sections a few inches in length, by diagonal reticulations, imparting to the trees a curious latticed appearance. Small trees growing in the open, were perfect in their conical outline, with bright foliage and shining cones.

AN ALLIED GENUS.—THE JUNIPERS.

This the last tribe of the multitudinous *Cupressaceæ*, or cypress-like trees, also composing the last genus of the entire Order of Cone-bearers, is peculiar in being so compact and nearly uniform a group as to be generally considered as a single genus (*Juniperus*), though comprising a large number of species.

The fruit is a much condensed, almost consolidated body, called a *galbulus*, or drupe, only the vestiges of the ends of the scales being visible. Being nearly round and very small, it is generally called a berry—the well-known juniper-berry.

The Junipers are evergreen, slightly resinous trees, or shrubs, found in temperate and frigid regions of the Northern Hemisphere, on tops of tropical mountains, generally in arid interior localities; their fine branchlets and small scalelike leaves being better adapted to hot, dry climates than would broad-expanding, thin leaves. Of course, like other plants of arid regions, other organs (the

branchlets) perform the functions of leaves in the elaboration of sap; the tender branchlets being endowed with stomata, or breathing-pores, and so dispensing in great part with regular leaves.

The noted *Palo Verde*, or Green Acacia of Arizona and Mexico, is an extreme case,—the trees bearing only little dots of leaves, and these only for a few days in winter.

There are about forty known species, but some have been in cultivation so long that many forms have been developed, so diverse in character than they would be declared distinct, if found in nature. This fact proves the horticulturist's belief that "any species of plant is always ready to change its locality and its habitat for better ones." The convulsions of nature and the vicissitudes of the Ice Age have given to the world the so-called natural characters; while man may at any time remove trees to different soils and climes, and surround them with different influences—and actually create different species! Witness the wonderful deeds of Luther Burbank along this line.

About twenty species of Juniper have been found in the Old World—with Central Siberia and Northern India and China and Central Africa practically unexplored. One of these is found also sparsely in America, five are in Mexico (two of them reaching Texas), two are in the Eastern States, and seven are on the Pacific Slope.

Some authors divide the Junipers into three sub-genera: *Oxycedrus* (the sharp-leaved, true Juniper), with leaves in whorls of threes; *Sabina*, the Savin Junipers, with leaves in pairs, and opposite; and *Cupressoides*, with leaves in pairs, but dimorphous, and the cones cypress-like—i. e. with slightly separating scales.

One of the sub-genera, named foregoing, contains most of the Western species; the two other sub-genera are each represented by one species only.

SUB-GENUS *CUPRESSOIDES*—CYPRESS-LIKE JUNIPERS.

Flowers mostly terminal, leaves in twos, opposite, forming four ranks, scalelike, glandular, and closely appressed in the ultimate branchlets. Berries large, more or less angular, with prominent vestiges of the agglutinated scales.

1. **Alligator Juniper** (*J. pachyphlœa*, Torrey).—This very singular tree of Arizona and New Mexico, and sparsely southward in Old Mexico, has very thick bark—one to three inches thick, which is usually whitish, hard, persistent, deeply furrowed, and cross-checked into squares or oblong blocks. The berries are large, nearly a half-inch thick, dark green, becoming brown, three to four seeded, the fibrous flesh sweetish to the taste; hence a staple article of Indian food. Trees fifty to sixty feet high, with trunks three to five feet in diameter, with long spreading branches. Inhabits high plateaus, 4,000 to 6,000 feet in altitude. At its best on the wooded plateau south of the San Francisco Mountains, and when seen from the railway-train, the rounded head of verdure upheld by a thick, white trunk, checkered like the hide of an alligator, this tree is never suspected of being a Juniper, and is a never-failing object of interest to travelers.

SUB-GENUS *OXYCEDRUS*—PRICKLY JUNIPERS.

Small-berried species, with leaves ternate, jointed at base, half an inch long, half a line wide, convex and sharp-pointed. The common Juniper of Europe belongs here (*J. communis*, Linn.). It has been so long in cultivation that many marked varieties have been produced. One is a tree with bronzy or dark-red foliage, frequently met with in pleasure-grounds; other species are distinguished by having long, prickly ternate leaves and short, smooth binate ones on the same limbs, often on the same branchlet. A prostrate variety is found on the northern mountains of the Pacific Slope.

2. **Creeping Juniper** (Var. *Siberica*, Rydberg).—A prostrate form of the preceding species, is found rarely on our northern mountains next the eternal snow-banks, hence most of the year enveloped in ice. Collected by the writer and his wife near the Elliot Glacier on Mt. Hood, September, 1894. Found as far south as Mt. Stanford, Nevada County, California. The long, creeping branches, rooting freely in the glacier mud, their densely-leaved branchlets gemmed with dark-green, beadlike berries, the strong, sharp leaves white-lined above with scores of stomata, or breathing-pores, the plants are no less surprising than pleasing.

SUB-GENUS *SABINA* — THE SAVIN JUNIPERS.

Trees with flowers terminal on short branchlets; seeds solitary to twelve; leaves binate and forming four rows, or in threes and six-ranked. On young plants and on vigorous shoots, large, free at tip, and very sharp.

This group comprises the rest of the Western Junipers, divided for convenience into two sections:—

SECTION 1.—LARGE-FRUITED JUNIPERS.

GLOBULAR OR OBLONG, GREEN, BECOMING BROWN.

3. **California Juniper** (*J. Californica*, Carriere).—Conical-shaped trees often thirty to forty feet high, with irregular trunks one to three feet thick; bark thin, on old trees soft and shreddy; berries large, green, and glaucous, the first season becoming reddish-brown; leaves ternate, obtuse, often conspicuously glandular. A low-sprawling shrub on the San Gabriel plains of Southern California, they extend eastward, become trees, and climb the cross ranges to the Sierra, where they reach Walker's Pass, at an altitude of about 9,000 feet.

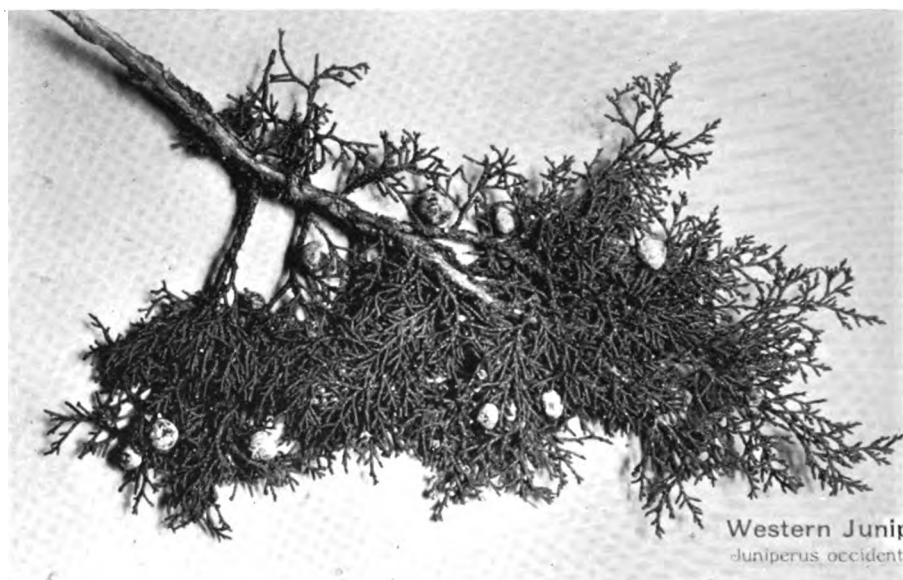
The species is sparsely found in the Coast Range as far north as the lower Sacramento River. Very serviceable as fencing material and fuel.

4. **Basin Juniper** (*J. Utahensis*, Lemmon).—Trees on the eastern slope of the Sierra Nevada, yet within the limits of California are numerous and of large size, fifteen to twenty feet high, with short, usually eccentric trunks, one to two feet thick. In the Great Basin usually smaller, and with divided trunks. Branches erect, contorted, forming an open head, or with several branches springing from near the ground and ascending eight to ten feet; bark thin, ashy-gray, becoming dingy-brown, sometimes whitish, broken into long, soft divisions; branchlets slender; leaves in pairs or threes, oppressed, glandless, turning brown in drying and remaining on the tree; berries quite large, about one-third of an inch in diameter, ripening at the second season, with dry, fibrous, sweetish flesh.

Found mainly in the arid region between the Rocky Mountains and the Sierra Nevada. In Nevada it is the only tree that descends to the general level, where it forms open forests at elevations of about 5,000 feet. On the mountains it mingles with the single-leaved Nut Pine in forming forest covers. Juniper Mountain, a high, rolling plateau extending from Southern Nevada to Southern Utah, is covered with a pure forest of this interesting Juniper. Extends southward to Northern Arizona and New Mexico. Early confounded with *J. Californica*, but very distinct in the characters mentioned and in the very different habitat—the two separated by the Mohave Desert, and never commingling.

One quite marked variety, or perhaps distinct species, has been detected:—

5. **Cosnino Juniper** (Var. *Cosnino*, Lemmon) *N. var.*—Fine round-headed trees, with abundant branches and distinctly terminal flowers; leaves ternate, often free at the ends; berries very large, over half an inch long, often almost bi-lobed; seeds two to four. A distinct forest along and near Cosnino Cañon, ten miles east of Flagstaff,



Western Juniper.
Juniperus occidentalis.

WESTERN JUNIPER.—*Juniperus occidentalis*, Hook.
From a photograph by J. G. Lemmon.



California Nutmeg.
Tunion Californicum.

CALIFORNIA NUTMEG.—*Tunion Californicum*, Greene.
From a photograph by J. G. Lemmon.

- Arizona, south and near the base of the San Francisco Mountains.

A marked feature is the thick, soft, but strong bark, which separates from the old trees in ropelike pieces several feet in length. Used by the Indians in making their mats and thatching their tepees. Collected by J. G. Lemmon and wife, November 25, 1892.

Probably distinct, and entitled to specific rank as *Juniperus Cosnino*, n. sp.

SECTION 2.—SMALL-FRUITED JUNIPERS.

GLOBULAR, GLAUCCUS, BECOMING BLUE-BLACK.

6. **Western Juniper** (*J. occidentalis*, Hooker).—Becoming trees forty to sixty feet high, with straight trunk two to four feet in diameter, but more frequently not exceeding twenty feet high, with broad, rounded, low head, and a trunk seven to ten feet thick. Branchlets stout and thick after the leaves fall, covered with red-brown bark, which breaks into loose, papery scales; leaves in threes, closely appressed, ovate, obtuse, and conspicuously glandular; berries globose or oblong, one-fourth to one-third of an inch long, with a thick, blue-black epidermis, and dry flesh filled with large resin-glands—hence unfit for food. Found on mountain slopes of Idaho and Eastern Washington, down along Cascade and Sierra Nevada Mountains to San Bernardino Mountains.

Attains its greatest trunk-diameter on the western slopes of the high, bald, rocky, wind-swept Sierra, where it is often found at 10,000 feet altitude, standing like a sentinel, alone, its massive trunk and far-reaching branches apparently clasping the rocks and crags, it seems impregnable to the fiercest winter gales. In company with the Murray Pine and the Alpine Pine, growing in the rich glacier meadows, it becomes a tall, symmetrical, well-behaved tree, of great age—one or two thousand years.

In Bear Valley, on the northern slope of the San Bernardino Mountains, at an altitude of 6,000 to 7,000 feet, it forms a nearly pure forest of great value.

7. **One-Seeded Juniper** (*J. monosperma*, Sargent).—Trees forty to sixty feet high, with a much-fissured and buttressed body, one to three feet thick, these Junipers are found from the western mountains of Colorado, southward to Texas and westward to Utah, New Mexico, and Arizona. The branches are short and stout, forming an open, irregular head; often an unsightly shrub, with numerous contorted limbs; bark thin, shreddy, in narrow ridges which separate into long persistent scales, disclosing the red inner bark; leaves binate or ternate, and without glands; berries globose, an eighth to a quarter of an inch long, dark blue, becoming copper-colored; flesh sweetish, from which, on some trees, the seeds partially protrude; seeds one to three.

8. **Rock Juniper** (*J. scopulorum*, Sargent).—This tree has long been taken for the Red Juniper of the East (*J. virginiana*, Linnæus), a tree very widely distributed over the northern part of North America. This tree is distinguished for its usually tall, slender growth, often one hundred feet high, its small glaucous fruit, and its soft, easily-worked red wood, which is largely used in making tubs, measures, and general cabinet work—and especially in the manufacture of pencils.

The form in the West, from the Black Hills of Nebraska and the mountains of Montana and Idaho southward to Arizona and New Mexico, has been separated by Professor Sargent, and named as above. It differs from all other Western Junipers in having white sap-wood and bright-red heart-wood, with bark deeply furrowed longitudinally; the branchlets very slender, long, and drooping, much like a Lawson Cypress.

It is fond of the banks of dry cañons, clinging to crev-

ices half-way down to the water, and holding out its waving arms, swaying with every breeze, as in very approval of the raging storm.

It should be stated in this connection that, as an after-thought, Professor Sargent receded from his position, and in his *North American Sylva* has referred this form to the beautiful and widely distributed Virginia Juniper, with this statement: "This, the largest and most valuable of American Junipers, is the most widely distributed coniferous tree of North America."

9. **Wyoming Juniper** (*J. Knightii*, Avon Nelson).—"Small trees or large shrubs, usually branched from the base, with a rounded bushy clump of sub-equal spreading branches ten to thirty feet high; branchlets stout and thick; leaves in threes; berries large, blue-green or copper-colored; scale-vestiges prominent; seed single, rarely two, pulp dry. Usually the sole occupants of the dry Red Desert and other regions of south-central and southwestern Wyoming." Perhaps not distinct, having many of the characters of *J. monosperma*, described, except in the character of "berries large," which must be an error, if the seeds are single. (Description quoted from Nelson's brochure.)

ORDER TAXACEÆ.—THE YEW FAMILY.

This large order of trees is sometimes discussed with the Cone-bearers, because they are slightly resinous, but it is best to consider them as separated. They are really very numerous, but as its members are principally in the Old World and the Southern Hemisphere, the group does not seem of importance to us.

The order comprises four tribes, with twelve genera and about ninety species. Among them are the great trees of *Podocarpus* (foot-stalked fruit), a genus of Australia, comprising fifty species; the *Dacrydiums*, of nine species,

in India; and the curious Prince Albert Yew (*Saxe Gothæ*), of Patagonia; besides the true Yews, of five genera—two of which alone represent the entire order in America. The whole order is diœcious—i. e. the male, or pollen-bearing, flowers on one tree, the fruit-bearing on another.

True Yews (*Taxus*, Tournefort).—The true Yews are numerous as regards species in foreign regions, with two species in the Eastern States, and one on the Pacific Slope. The principal European Yew is *Taxus baccata*, of Linnæus, found in most parts of Europe at elevations of 1,000 to 2,000 feet, from the mountains of Greece and Italy to Spain and England northward to the Scandinavian mountains. Usually a large bush, it often becomes a small tree, with a short stem and ample head composed of many branches set with drooping branchlets clothed with dark-green, linear leaves in two ranks.

Several varieties have been produced in cultivation, principal of which is the Irish Yew, considered distinct by Sir William Hooker, and named by him *Taxus Hibernica*. It is a tree with strict, erect branchlets, closely compressed, like an Italian Cypress, the leaves scattered; the berries are oblong, not globose, as in the common Yew.

The principal Yew of the Eastern States (*Taxus Canadensis*, Willd.) is distributed as a straggling bush throughout the provinces of Canada and in New England. Another in the Southern States becomes a small tree in Florida.

Pacific Yew (*Taxus brevifolia*, Nuttall).—This Yew is a special product of the peculiar Western forest development. It becomes a large tree in favoring circumstances, two to four feet in diameter, and seventy-five to one hundred feet high. It loves the borders of streams in low, rich woods of Western Washington and Oregon, extending northward to British Columbia, and southward along

the Coast Range to Santa Cruz, while eastward it penetrates as a small shrub the forests of Idaho and Montana, and down on the Cascade and Sierra ranges to Yosemite Valley. In the Coast Range it becomes a tree two to four feet in diameter, with wide-spreading branches.

The wood of the Yew is strong, elastic, anciently in use for making Indian bows. The fruit is composed of a small, fleshy, bright-red edible cup three to five lines in diameter, holding a solitary ovate, hard-shelled seed, sitting like an acorn, except that it is free in the bottom of the cup. Prized by the natives for food.

False Nutmeg-Tree (*Tumion*, Rafinesque).—This genus comprises four species, the first discovered in Florida, a second in China, a third in Japan, and the fourth is in California. They are usually small trees of a heavy odor. They have a one-seeded drupaceous fruit that both exteriorly and interiorly resembles the nutmeg of commerce, but unlike it in other respects, being strongly impregnated with a terebinthinous fluid.

The first species, marking a singular deviation from known members of the order, and rightly judged to the type of a distinct genus, was named *Torreya*, in honor of the distinguished pioneer of American botany, Dr. John Torrey; but later researches discover that Rafinesque had in some way previously received specimens and had named it as above. Botanists still fondly call it Torrey's Nutmeg.

California False Nutmeg (*T. Californicum*, Greene).—This most singular tree is quite local in two limited regions quite different in altitude and environment (suggesting a division of the species),—one a narrow strip along the coast from Mendocino to Santa Cruz comprising large trees two to five feet in diameter, the other a thin line of trees on the west slope of the Sierra Nevada from

Butte County to Mariposa County (Yosemite Valley). The wood is strong-scented, light, soft, unadapted to use in the mechanical arts.

The branches are regular, mostly in layers, resembling the Fir family. The leaves, dark-green and shining, are very large for the genus, lanceolate, one to one and one-half inches long, and tapering to a sharp point. They are distinctly lined below with two longitudinal furrows, and disposed in two ranks along the stout branchlets. The "nutmeg" is borne pendently on the ends of the branchlets, like a small plum, oblong, three-fourths to one inch long and half as thick, often found a third larger. In the Santa Cruz Mountains near Stanford University are several noted trees of large size and great beauty. Trees near Mendocino are found three to five feet in diameter. Several in Marin County near San Francisco are nearly as large; one small but very beautiful tree, on the line of railway near Camp Taylor, has been provided with an appropriate label for the information of travelers.

Coast Nutmeg (Variety *littoralis*, Lemmon).—The original description of the California Nutmeg having been drawn from specimens of the small form on the high, dry flank of the Sierra, the writer, in his Handbook of West-American Cone-Bearers (1895), published the beautiful, more robust, often gigantic trees of the low, fog-drenched coast, with fruit as large as an egg-plum, under the above name; and the differences in characters seem to justify the separation.

In concluding these papers on the Cone-bearers (to be followed, perhaps, by others on the Broad-leaved Trees), I should make an explanation of an omission in one of the early descriptions.

In the BULLETIN of May, 1897, discussing the Pine family (at the bottom of page 73), the range of the Big-

cone Pine (*Pinus Coulteri*, Don) was given as—"Southern coast mountains from San Luis Obispo east to San Bernardino, and southward to highest peaks of San Diego County."

From early times it has been reported that trees of the Coulter Pine were found on Mt. Diablo. Some writers reported that the trees belonged to the other large-coned species, the Gray Pine (*P. Sabiniana*, Dougl.), and so, there being a diversity of opinion, I left out this northern locality for the Big-cone Pine until the question was settled.

The confusion has arisen from the fact that groves of *both* species are found on the slopes of that celebrated mountain. One in Pine Cañon, on the west slope of the mountain, is a marked form of the Gray Pine, with its light-green, sparse leaves and large ovoid cones; while in Mitchell Cañon, on the northern slope of the mountain, and spreading over the broad ascending slope toward the east of it (in full view of the village of Clayton), is a fine large grove of about one thousand acres of Pines, with long elliptical cones and dark-green leaves, that, on account of these principal characters, must be classed with the Big-cone (or Coulter) Pine.

As long ago as 1878, the writer, exploring Mt. Diablo, found the two pines, and sent specimens of each, with descriptions of the trees, to Professor Bolander, then the authority on trees of the Pacific Slope. He reported, "Both are marked specimens of the variable Digger Pine (*P. Sabiniana*)."

Visiting the region twice later, and giving especial attention to this northern grove, I am convinced more than ever that the trees are an aberrant form of the Big-cone (or Coulter) Pine (*P. Coulteri*, Don). They are comparatively smaller trees than the typical species in its far-away southern home, with smaller cones and

shorter leaves, but in general characters unmistakably the same.

The trees are fifty to eighty feet high, spire-shaped, with an abundance of dark-green leaves in fascicles of three, and about one foot long. The cones, narrowly elliptical, rarely a foot long, are strongly declined, and firmly persistent for six to eight years. They are slightly incurved and armed with large formidable hooks, terminating the scales, each about an inch long and nearly of the same length on all sides of the cone. They are shaped like and about as large as hawk-bills. The black seeds are much larger than in the type—being five-eighths to three-fourths of an inch long, the wing shorter,—i. e. one inch long beyond the seed,—one-half inch wide and one-eighth inch thick at the base.

This beautiful outlying form of the noble Coulter Pine, with its smaller proportions, its strongly protected, hook-defended cones, etc., is possessed, it would seem, of enough divergent characters to entitle it to a varietal name, and may be designated as Variety *Diabloensis*, N. var.—The Mount Diablo Hook-cone Pine.

ORDER TAXACEÆ.

THE TAXADS.

**Yews and their
Allies.**

Leaves linear,
short. Fruit,
Drupe-like, sin-
gle-seeded.

Abundant in
the Old World.
Represented in
America by only
two genera, one
species of each
on the Pacific
Slope. Both in
California.

ORDER CONIFERÆ—CONCLUDED.

Division II.

CYCLALES, THE WHORL-CONE TREES.

Fragrant trees with small scale-like leaves,
these and also their cone-scales in twos (then
opposite), or in threes (ternate). Slow-growing,
fine-grained trees of both hemispheres.

Tribe 2.

One large compact
genus, composing the
junipers.

Junipers.
Fruit a consolidated
"berry," with ver-
tiges of scales.

Tribe 1.

Cypresses and their
Allies—Two Pairs.

GROUPS.

1st Pair.

American Cedars.
Fruit oblong and
fibrous.

2d Pair.

The Cypresses.
Fruit globose and
woody.

JUNIPERUS.

True Junipers

Cherisoides,
Cypress-like Junipers.

Sabina,
Savin Junipers.

Oxycedrus,
Prickly Junipers.

Taxus,
True Yews.
Taxodium,
False Nutmeg.

CUPRESSUS.

True Cypresses

California Cypresses.

Southern Cypresses.

Chamaecyparis,
Ground Cypress.

Libocedrus,
Incense Cedar.
Thuja,
Arboresc.

GENERA AND SUB-GENERA.

BOTANICAL SPECIES.

ENGLISH NAMES.

1. *Decurrent*.

Incense, (or Post) Cedar.

1. *Plicata*.

Canoë, or Red Cedar.

1. *Stitchensis*.

Alaska, (or Yellow) Cypress.

2. *Lawsoniana*.

Lawson Cypress.

1. *Gnadalouperensis*,
Guadaloupe Cypress.

2. *Arizona*,
var. *bonita*.

Arizona Cypress.
Bonita Cypress.

3. *Macrocarpa*.

Monterey Cypress.

4. *Goweniana*,
var. *parva*.

Gowen's Cypress.
Pygmy Cypress.

5. *Macrobiana*.

McNab's Cypress.

1. *Pachyphloea*.

Alligator Juniper.

2. *Occidentalis*.

Western Juniper.

3. *Californica*.

California Juniper.

4. *Utahensis*,
var. *costarica*.

Great Basin Juniper.
Cosmopolitan Juniper.

5. *Monosperma*.

One-seeded Juniper.

6. *Scopularum*.

Rock Juniper.

7. *Knightsii*.

Knight's Juniper.

8. *Communis*,
var. *Siberica*.

Common Juniper.
Creeping Juniper.

1. *Brevifolia*.

Pacific Yew.

1. *Californicum*.

California Nutmeg.

CONSPECTUS OF CYPRESSES, JUNIPERS AND YEWS.

BIRDS OF THE HIGH MOUNTAINS.

BY VERNON L. KELLOGG.

The end of the day's steady tramping came not too soon to be unwelcome. In the beaver swamp at the cañon's mouth we had splashed for an hour; we had not scaled the rough rock-wall of a promontory which nearly closed the gorge without scratches and bruises; we had found most precarious footing over a great mass of loose, sharp rock-debris, sometime hurled in one crashing avalanche from the towering cliff-side; and the long, weary stretch of fallen pines beset with dense undergrowth had left grave doubts in our minds about the reality of the delights of mountaineering. And yet there were delights. Here in camp in the depths of the gorge, with the reaching walls inclosing and protecting us; in the soft dusk creeping up the cañon about us, while far above the glancing day still hovered; in the white banks of snow on the distant peaks, still shot across and made glorious by the sun's rays; and in the steady rhythmic plashing of the restless stream over the rounded rocks of its bed; in all these were delights. The bit of dancing flame with its tenuous line of smoke wavering up to the spruces' tops and escaping into the chill dusk above; the energetic little coffee-pot, bubbling over with sheer delight; the redolence of the sputtering bits of bacon vying with the piny fragrances in scenting the air about us; the stolid munching donkeys, lazily cropping the scant vegetation;—these incidents of a mountain camp were all delights.

There were pleasant, fresh memories of the day, too. We had decided to give this trip especially to making acquaintance with the mountain birds, and the day, as well as the days before, had been crowded with the incidents of bird-seeing. We had climbed no peaks yet, but had come slowly but steadily up from the plains, and had made acquaintanceship with the birds of the lower levels,—the lower life zones, as naturalists would say,—and were now at our last camp below timber-line, at nine thousand feet.

It is probably familiar knowledge to Sierra-Club men that the naturalist recognizes in climbing mountains practically the same phenomena of animal and plant occurrence and distribution as he does in clambering over parallels of latitude when going north or south from the tropics. Altitude equals latitude in its influence on organisms. Around the base of a great mountain in the tropics there is a lush jungle of tropical vegetation peopled by equatorial animals, a tropical life zone; above the base there is a broad circle, or zone, of sub-tropical plant and animal life; above this a temperate life zone, with its familiar genera of deciduous trees and animals of our own habitat; higher up yet comes the zone of pine-trees, running above into spruces, and fading out at timber-line in the low storm-beaten spruce and juniper "bushes," and peopled by birds and mammals unfamiliar for the most part to us, but like those of the sub-arctic latitudes of our continent. Finally, above timber-line is the true alpine zone, which, with its persistent snow-fields, its low night temperatures, and fearful blizzards, is a true arctic region. Here only low, hardy plants can cling to the rocks, or grow swiftly by the snow-bank's edge in the short, bright summer, and only a few animals, specially adapted to the severe climate, can endure. To be sure, the fauna of a mountain-top is not exactly the same as

the fauna of the arctic zone; the polar bear and musk-ox and reindeer are not found on the peak-summit, because barriers shut them off; but what few animals do live on the mountain-top are characteristically arctic in their habit and affinities, and in not a few instances we have striking examples of the actual identity of alpine and arctic animals. For example, certain butterflies have a range of distribution which is sub-arctic as regards latitude (extending clear across the continent north of the Canadian-United States boundary) and sub-alpine as regards altitude (extending far south along the summit and upper flanks of the Rocky Mountain and Sierra Nevada ranges).

Characteristic and unmistakably recognizable among the birds to be seen on a mountain trip, whether to the Sierras in California or the Rockies in Colorado, is the magpie (Fig. 1), and we found these curious long-tailed birds at the very beginning of our climb. They inhabit the lower flanks of the mountain. The magpie is so large and strikingly colored with its iridescent, bronzed-black back and white shoulders, breast, and under parts, and has such an unusual and conspicuous long tail (a foot or less) that the first glimpse of the birds makes us sure of their identity. Walter Fisher tells of the habits of the magpies about Mono Lake as follows: "Every morning saw small droves of black-billed magpies [naturalists recognize two species, one black-billed, the other yellow-billed] catching grasshoppers, and their keenest rivals at this relentless warfare were the sparrow-hawks. Usually the magpies held forth on the lower slopes of the piñon hill, where they engaged in endless squabbles from daylight till dark, the echoes of their profanity reaching me at the ranch-house where I must need spend much good time in preparing specimens. So well did these two species do their work that by the end of the week nearly

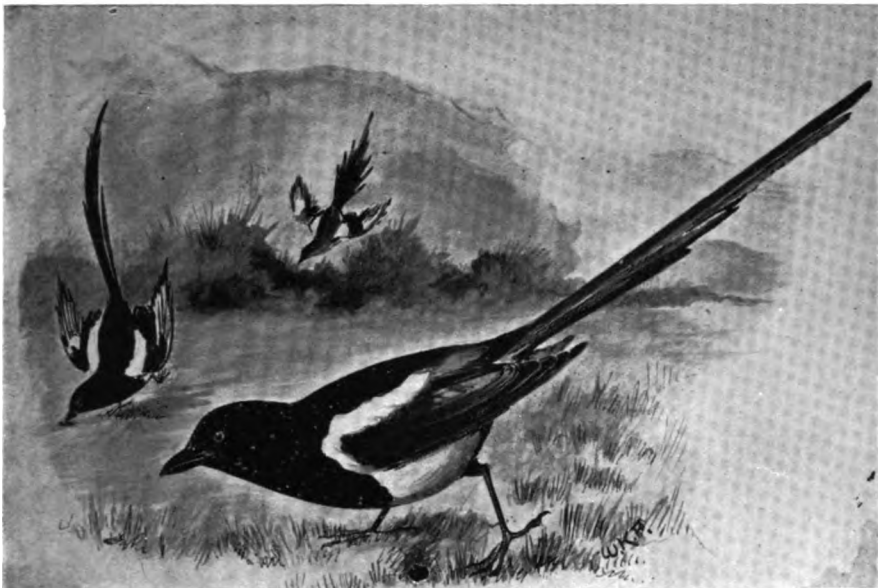


FIG. 1. MAGPIES.

Drawn by Walter K. Fisher; permission of *The Condor*.



FIG. 2. ARCTIC THREE-TOED WOODPECKER.

Picoides arcticus.

Drawn by L. A. Fuertes; by permission C. Hart Merriam, United States Department of Agriculture.

all the grasshoppers had disappeared from the meadows. It proved a very entertaining sight when the magpies chased the grasshoppers, as they occasionally would do, for their agility in dodging and circling proved how mistaken we are likely to be in forming an estimate of a bird under ordinary conditions. Usually nonchalant and absurdly dignified in their demeanor, these birds could at times assume the utmost interest in their occupation, and dart with surprising speed here and there. They used their tails about as much as their wings in flying."

Almost sure to be noted on mountain trips are birds of another extreme in size—the tiny, swift-winged humming-birds. To an Eastern bird-lover, forcedly content with a single, albeit choice, humming-bird species, the ruby-throat, the first experience of bird-seeing in the West will undoubtedly be always memorable by his "discovery" of hosts of humming-birds. The broad-tailed hummer is so abundant in the Rocky Mountains (of Northern Colorado at least, where I learned to know them) that acquaintanceship with it fairly prepares one for the comparative wealth of humming-bird life which is to be found when the Pacific Coast is reached. I do not know how many species of hummers are recorded from the Sierras (four have been found in the Tahoe region), but there are enough to provide delight to every observant mountaineer. Perhaps there are a few bird-lovers who still fondly hold to the unenlightened fancy that the humming-bird's long bill is for nectar-drinking. Be informed! Master Hummer is a blood-letting carnivore! That bill is a dagger, and a dagger with a sharper, fiercer javelin concealed inside of it. The humming-bird tongue is as exquisitely fit a fork for spearing little bugs that are sipping nectar at the bottom of deep flower-cups as nature or the wit of man can well devise.

Another beautiful strong-winged mountain bird is the

violet-green swallow, which we had seen circling about in the cañon a few miles below camp. This species is the common swallow of both the Rockies and Sierras. Other swallows, as the cliff and barn, come into the lower mountains, but they really belong in the valleys. The violet-green is the rightful mountain swallow, and, with its short, slightly emarginate tail, its pure white under parts and velvet-green back, it can be readily distinguished from the barn-swallow, with its long forked tail, or the blue-backed, rusty-bellied cliff-swallow. Violet-green may be seen skimming gracefully over mountain lakes, or wheeling and darting in cañons, anywhere in the mountains up to eight thousand feet altitude.

We had seen grouse, but had n't killed them. And this is not to the discredit of our marksmanship, but to the credit of our good hearts. For the mother grouse we startled was so obviously the mother of grouse that we held our murderous fire and refused to allow the fluttering, feigning bird to sacrifice herself, as she offered, for her young. John Muir has found the mother grouse in the Yosemite. "On the approach of danger," he writes, "the mother with a peculiar cry warns the helpless midgets to scatter and hide beneath leaves and twigs, and even in plain open places it is almost impossible to discover them. In the mean time the mother feigns lameness, throws herself at your feet, kicks and gasps and flutters to draw your attention from the chicks. The young are generally able to fly about the middle of July; but even after they can fly well they are usually advised to run and hide and lie still, no matter how closely approached, while the mother goes on with her loving, lying acting, apparently as desperately concerned for their safety as when they were featherless infants. Sometimes, however, after carefully studying the circumstances, she tells them to take wing; and up and away in a blurry birr and whirl

they scatter to all points of the compass, as if blown up with gunpowder, dropping cunningly out of sight three or four hundred yards off, and keeping quiet until called, after the danger is supposed to be past. If you walk on a little way without manifesting any inclination to hunt them, you may sit down at the foot of a tree near enough to see and hear the happy reunion. One touch of nature makes the whole world kin; and it is truly wonderful how love-telling the small voices of these birds are, and how far they reach through the woods into one another's hearts and into ours. The tones are so perfectly human and so full of anxious affection, few mountaineers can fail to be touched by them."

This grouse of the Sierra Nevada is of the same species as the common mountain grouse of the Colorado Rockies. It is variously called by mountaineers blue, or dusky, or pine, or mountain grouse. They are next to the sage-cock in size of all the grouse, reaching a length of two feet. The upper parts of the old cocks are strongly slaty, or bluish-gray, while the under parts are paler, tending to white. Its nearest relative—a distinct and somewhat smaller species, however—is the Canada (or spruce) grouse of the Northwest. The dusky grouse lives mostly on the ground in forest regions, taking readily to the trees when flushed. Here it slowly moves about so as to keep behind the trunk or a large branch, or sits immovable, trusting to its protective coloration to save it from its enemies. On that account it is readily killed if seen, and because of its stolidity is sometimes called "fool-hen" by hunters. Its stolidity is anything but foolish when pursued by natural enemies. But natural selection hardly counted on the man behind the gun!

In the late afternoon, when the way began to seem unusually rough, and even the stream's rushing singing began to pall a bit, we made our best find. Audaciously

standing ankle-deep on the very edge of a little fall in the stream, a sober-mantled, plump-bodied, bright-eyed bird watched us keenly for a few moments, and then with a spray-flirting whisking of short rounded wings dashed up stream. We knew our find with the first glance. We had been told too often and had read too carefully about Mistress Ouzel's seeming and manners to be puzzled for a moment by this quickly vanishing bird-sprite. Indeed, ouzel was an old friend of mine, at least; for a half-dozen summers in the Rockies had brought us to a familiar footing. All through the mountains of western North America from Alaska to Mexico this most interesting and attractive bird is at home. Not a "water bird," as we use the term, meaning the ducks and shore-birds and all the host of related aquatic and semi-aquatic bird forms, but a thrush, a bird of the woodland songster group, that has simply left all the tradition of its ancestors and all the custom of its companions aside and has adopted the swift, cascading mountain stream for home, and the song of the stream for lullaby for its young in the rift of the stream's rock wall. There is no mistaking the ouzel; no other bird swims under water in the stream pools; no other bird stands half submerged but jauntily secure on a rocky stone in the brawl of a cascade; no other bird sings from the depths of a cloud of spray at the side of a fall. He is simply dressed in brown, and looks much like an over-big wren. He bobs and teeters, picks his way daintily over the wet stones, and is ever bold and sure. His song is not loud, but wonderfully sweet and simple.

No bird-lover who has visited the mountains fails to find the ouzel, and if the bird-lover writes, the ouzel is sure to have the major share of the "piece." Olive Thorne Miller is a special lover of the ouzel, and has observed it in Colorado long and patiently and to excellent purpose. Muir has not failed to find the ouzel in the

Yosemite, and has tried to tell of him, but comes to an eloquent stop.

In camp here in the dusk the bird-seeing for the day is over. If we were in the Rocky Mountains, however, it would not be. For we should have bird visitors,—the ghostly leering Canada jays, silently slipping from branch to branch, intently watching us. These silent white-and-gray and ashy-leadened birds of the high mountains, known variously as Canada jays (or, better, Rocky Mountain jays, as the southern bird is a variety of the northern form, the typical *Canadensis*), or “camp-birds,” or “moose-birds,” or, quite absurdly, “whisky-jacks,” are familiar acquaintances of the Colorado mountaineer. I never roamed a day in the great spruce forest on the flanks of Long’s Peak or spent a night in those still haunts of the hermit-thrush but the gray jays visited me. Far to the north on the great barrens of New Brunswick, or in the dense forests of the Northwest Territories the Canada jay is well known to caribou- and moose-hunters. The “ubiquitous rascal”—so one naturalist-hunter calls him—hovers about the camps of the hunter and disputes each crumb of bread with him. In the Colorado mountains he is no less tame, and fluttering silently down and up between ground and branch, he makes sure work of any overlooked morsels of food. Mute birds! Not a cry or call, not a clash or rustle of wings to give them reality. They would be impudent were they not so evidently exercising a proprietary right; one would talk with them were they not so plainly mere ghosts.

.

All through the night there is singing; and there are odors. One lies drowsing and listening and breathing fragrant, soothing balms. The spruces and pines and some mintlike, square-stemmed plant, and the smooth

grass-leaves, and the nodding wind-flowers, the fresh, damp ground, and the fallen dead trunks, all breathe sweet smells. And a subtle, musty, elusive odor—is it the breath of the gray granite walls? And through the odor-weighted air the soft singing of the wakeful stream, telling of its snow-fountains on the dark summits of the range, of its creeping among the alpine buttercups which cling to the very verges of the great snow-fields, of its fearful leap over some sheer cliff to its uneven way down the cañon. A faint singing is high above on the side of the cañon; or is it the singing of the east wind among the aspen's leaves? It is a familiar singing, but whether of bird or leaf or wind one cannot say.

"Bubble, bubble flows the stream,
Like an old tune through a dream."

.

The early gray of the mountain morning was welcomed by earlier risers than we. The brisk rapping of a red-shafted flicker at the very top of a stark, branchless spruce shaft reminds one of similar tattoos heard about our valley homes. In truth, this is the same flicker that we have in the lowlands. In the Eastern States a similar species, but with the under sides of wings and tail golden yellow instead of orange red, is the common flicker, or yellow-hammer. But yellow-shafted and red-shafted are so closely allied, and hybridize so readily, that in coming from the East to the Rockies one can collect a series of specimens showing almost a perfect transition from one form to the other. West of the Rockies the red-shafted practically supplants the yellow, and thus is the one flicker of both lowlands and mountain.

The finest and largest of the mountain woodpeckers is the magnificent log-cock. It is from fifteen to twenty inches in length, dull black all over, except for a white throat, a white line on each side of the head and neck, and



FIG. 3. AUDUBON WARBLER.
Dendroica Auduboni.

Drawn by L. A. Fuertes; by permission C. Hart Merriam, United States
Department of Agriculture.



FIG. 4. WESTERN EVENING GROSBEAK.
Coccothraustes vespertinus montanus.

Drawn by L. A. Fuertes; by permission C. Hart Merriam, United States
Department of Agriculture.

a splendid scarlet head-crest. The log-cock is a "wild, wary, and solitary" bird, keeping to the heavy forests, and retreating before the advance of man. Other woodpeckers distinctly mountain-inhabiting are the odd alpine three-toed forms, of the genus *Picoides*. (Fig. 2.) These woodpeckers have the first toe absent, the fourth toe being turned backward, as usual in the family. The sides of the head are striped, and the rest of the body, except the white under-parts, barred with black and white, while the males have a square yellow patch on the crown. There are three American kinds of three-toed woodpeckers, all confined to boreal or alpine habitats, and evidently all, together with the Asiatic and European species, descended from a common circumpolar stock. These birds are not so common that the finding of one should not be looked on as a real ornithological coup. W. W. Price has found them on Pyramid Peak. In several summers' tramping in the Rocky Mountains I have seen but five of the birds, and these were all near timber-line.

The singing stream, in this cool dawn, is receiving the morning visits of its friends, the birds of the cañon. Here a brilliant black and scarlet Louisiana tanager, the most strikingly colored of all the Rocky Mountain and Sierran birds, and there the delightful little olive-backed, ruby-crowned kinglet, with its one bit of dashing scarlet concealed by overlying greenish feathers. Ruby-crown's song has few rivals in the mountain forests. Another wee bird commonly to be seen here is the famous Audubon warbler. (Fig. 3.) The male in summer, all bluish above with blackish streaking, and with crown, rump, throat, and breast-sides clear yellow, is a bird of rare beauty. Two other strongly marked birds of this zone are the evening and pine grosbeaks. The beak of these birds is very large and vaulted, being nearly as wide and high at base as it is long. The evening grosbeak (Fig. 4) is dark olive-

yellow, with black tail and black wings with conspicuous white patch; the pine grosbeak is roseate or light carmine, with blackish wings and tail.

As we straggle on through the upper forest belt, intent on reaching timber-line before the sun shall have softened the surface of the broad snow-field which we must cross just above it, we do not keep that silent and sharp watch for the birds which one must if he shall see close at hand the shyer, warier denizens of the higher forest. But as careless of the tree-tops and as intent on our footing as we may be, one characteristic bird kind of the upper mountain flanks is almost certain to call itself to our attention. The Clark nutcracker, or crow, (Figs. 5, 6,) is the "ubiquitous rascal" of the High Sierra, as the Canada jay is of the high Rockies, and, as Muir has well said, is the strangest, noisiest, and most notable of all the High Sierran birds. "He is a foot long," writes Muir, "and nearly two feet in extent of wing, ashy gray in general color, with black wings, white tail, and a strong, sharp bill, with which he digs into the pine cones for the seeds on which he mainly subsists. He is quick, boisterous, jerky, and irregular in his movements and speech, and makes a tremendously loud and showy advertisement of himself—swooping and diving in deep curves across gorges and valleys from ridge to ridge, alighting on dead spars, looking warily about him, and leaving his dry springy perches trembling from the vigor of his kick as he launches himself for a new flight, screaming from time to time loud enough to be heard more than a mile in still weather. He dwells far back on the high storm-beaten margin of the forest, where the mountain pine, juniper, and hemlock grow wide apart on glacier pavements and domes and rough crumbling ridges, and the dwarf pine makes a low, crinkled growth along the flanks of the summit peaks. In so open a region, of course, he is well seen. Everybody



FIG. 5.—CLARK CROW.—*Nucifraga columbiana*.

Drawn by L. A. Fuertes.

(By permission of C. Hart Merriam, United States Department of Agriculture.)



FIG. 7.—WHITE-CROWNED SPARROW.
Zonotrichia leucophrys.

Drawn by L. A. Fuertes.

(By permission of C. Hart Merriam, United States Department of Agriculture.)



FIG. 6.—CLARK CROW.
Nucifraga columbiana.

Photographed by Walter K. Fisher.

(By permission of C. Hart Merriam, United States Department of Agriculture.)

notices him, and nobody knows at first what to make of him. One guesses he must be a woodpecker; another a crow or some sort of jay, another a magpie. He seems to be a pretty thoroughly mixed and fermented compound of all these birds, has all their strength, cunning, shyness, thievishness, and wary, suspicious curiosity combined and condensed. He flies like a woodpecker, hammers dead limbs for insects, digs big holes in pine-cones to get at the seeds, cracks nuts held between his toes, cries like a crow or Stellar jay,—but in a far louder, harsher, and more forbidding tone of voice,—and besides his crow-caws and screams, has a great variety of small chatter talk, mostly uttered in a fault-finding tone.”

In the Lake Tahoe region, W. W. Price found Clark crows common everywhere about eight thousand feet, and on Mt. Tallac they continually pilfered his traps. Muir found them feeding their young as early as June 19th at a height of more than ten thousand feet, when nearly the whole landscape was snow covered.

As we push our way through the low, wind-beaten spruce bushes of timber-line a nervous, fluttering, finch-like bird is fairly numerous. This is the white-crowned sparrow (Fig. 7), one of the hardiest and most widely spread of all the sparrows and a familiar acquaintance of every mountain-climber in both Rockies and Sierras. White-crown nests above seven thousand feet, often undoubtedly just at timber-line, and its friendly, simple, half-sad little melody comes most welcomingly to one just stirring out in the cold dawn of a timber-line camp. In the Rockies I have seen white-crown well up on the peak sides above timber-line in the middle of the day. The conspicuous black-and-white-striped poll and the unmistakable “sparrow” appearance of the whole body make it easy to know white-crown when you meet him.

Above timber-line, on the steep, bleak, wind-swept

slopes of the Rocky Mountain crests, among the bare brown rocks and scattered snow-patches the mountain ptarmigan lives its lonely life. Exposed to the violent storms which sweep over the mountain summits, prey of the golden eagles and falcons which range the high peaks, the brown-and-white hen fights out for itself and young the wages of existence. With curious adaptive mimicry, the ptarmigan, in winter, when the high mountain slopes are wrapped in snow, puts on a plumage of unspotted white; but when the suns of spring sweep the brown rocks of their snow coat, leaving only the deep and protected never-melting snow-fields scattered over the summits, the ptarmigan dons a brown-and-white habit that harmonizes with the changed appearance of its mountain fields. One can rarely make an ascent above timber-line in the Rockies without seeing ptarmigan,—the upper slopes of the Front Range are thickly inhabited by them,—but the bird is yet to be seen in the Sierras. Grinnell thinks that it does not occur in the State. It is found in the Cascades of Washington and Oregon as far north as Mts. Hood and Jefferson. It seems strange that it does not come farther south.

We have come now to the very summit of the crest, to the capstone of the peak. Apparently we have passed the homes and feeding-grounds of even the bravest mountain birds. To be sure, the great golden eagle may soar royally aloft among the peaks, but its aerie is below us. We have brought ourselves on slow and patient feet beyond the range of the birds. But hold!—from the jagged cliffs of the peak's east side comes a gentle twittering, and then before our astonished eyes flutters a dainty, well-fed little bird, the gray-crowned leucosticte, or rosy finch. A chocolate-brown body, with crimson tinge, and brown to dull black crown has leucosticte, which belongs to the great family of finches, or seed-eaters, and is rather like

our common linnets. Its home is on the mountain's top, the crest's last ridge. Fluttering over snow-banks, where it reaps a rich harvest of frozen insects, or sweeping swiftly along in the strong wind, or darting into crevasses and rock-crevices for shelter, our brave little bird is a contented dweller in this truly alpine home. Far to the north on the Alaskan coast and Bering Island its cousins live at sea-level. But in this latitude leucosticte finds an arctic habitat at fourteen thousand feet altitude. On the very summit of Long's Peak (14,271 feet) in Colorado I have shared my luncheon with this hardy little mountaineer. . . . As we stand on the capstone of our mountain and look far out over the foothills and into the valley where wind peacefully the waters escaped from their mountain fastnesses, leucosticte flits over the cliff's edge and drops fluttering to the little green lake a thousand feet below. If we could drop as lightly we should be sooner home than we shall be.

SIERRA CLUB BULLETIN.

PUBLISHED IN JANUARY AND MAY OF EACH YEAR.

Published for Members.

Annual Dues, \$3.00.

The purposes of the Club are:—"To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada Mountains."

OFFICERS FOR THE YEAR 1902-1903.

Board of Directors.

Mr. JOHN MUIR	<i>President</i>
Mr. ELLIOTT McALLISTER	<i>Vice-President</i>
Mr. J. N. LeCONTE	<i>Treasurer</i>
Prof. W. R. DUDLEY	<i>Corresponding Secretary</i>
Mr. WILLIAM E. COLBY	<i>Recording Secretary</i>
Prof. GEORGE DAVIDSON,	Pres. DAVID STARR JORDAN,
Mr. WARREN GREGORY,	Mr. WARREN OLNEY.

Auditing Committee,

Directors GREGORY, McALLISTER, and DUDLEY.

Committee on Publications,

Pres. DAVID STARR JORDAN, *Chairman.*

Mr. J. S. HUTCHINSON, Jr.,	Dr. MARSDEN MANSON,
<i>Assistant Editor,</i>	Dr. EMMET RIXFORD,
Mr. A. G. ELLS,	Mr. E. T. PARSONS,
Mr. J. S. BUNNELL,	Mr. R. H. F. VARIEL,
Prof. J. H. SENGGER,	Mr. TRACY R. KELLEY.

Committee on Admissions,

Directors DUDLEY, OLNEY, and McALLISTER.

Committee on Parks and Reservations,

Prof. GEORGE DAVIDSON, *Chairman.*

Prof. W. R. DUDLEY,	Pres. DAVID STARR JORDAN,
Mr. J. M. ELLIOTT,	Mr. ABBOT KINNEY.

Committee on Outing and Transportation,

Mr. Wm. E. COLBY, *Chairman.*

Mr. J. N. LeCONTE,	Mr. EDWARD T. PARSONS.
--------------------	------------------------

SECRETARY'S REPORT.

FROM MAY 2, 1901, TO MAY 10, 1902.

The Club's membership is rapidly increasing. Attracted by the outing feature, over a hundred and twenty new members have been added to the list since the 1st of January, and last year there were more than fifty such who joined the Club. In a few weeks the total number of new members for a little over a year last past will be in the neighborhood of two hundred, or more than a third of the entire membership, which is rapidly approaching the six-hundred mark. As stated in last year's report, these newly-acquired members are most desirable, since they have the true mountaineering spirit, and their acquisition will add largely to the life, spirit, and growth of the Club.

This outing feature is already abundantly proven to be a most desirable element in the Club's existence, and it is hoped that it will be so extended in the future that special rates may be secured for members to all points of interest in the mountains.

Outings to Alaska, Mt. Rainier, the Yellowstone, and the Canadian Rockies are possibilities for future years. Next year it is hoped that our main outing will be taken in conjunction with the Mazama Club to Mt. Shasta, and perhaps Crater Lake and other points of interest.

Those desiring to visit Yosemite this year and take advantage of the special rates sent out in the recent circular letter should send in their names, at least provisionally, to the Secretary, stating what date of departure

between June 15th and July 10th would be preferable ; otherwise, it will be impossible to arrange for parties of fifteen in order to get the special rates.

In spite of the unusual expense connected with the Le Conte Memorial Fund this year, the Club's finances were never in better condition.

The Secretary's financial statement coincides with and is embodied in the Treasurer's report.

The Board of Directors which acted last year has been re-elected, and this Board has reorganized and elected the same officers to serve for the year 1902-1903.

Respectfully submitted,

WM. E. COLBY,
Secretary of the Sierra Club.

TREASURER'S REPORT.

FROM MAY 2, 1901, TO MAY 10, 1902.

RECEIPTS.

Cash on hand May 2, 1901.....	\$ 289 85
Total cash received from Secretary.....	1,550 19
	<hr/>
	\$1,840 04

EXPENDITURES.

Publications	\$ 552 55
Printing circulars, notices, receipts, etc.....	20 50
Postage, stationery, and distribution of BULLETINS..	146 58
Room rent (12 months).....	60 00
Clerical work and typewriting (15 months).....	225 00
Yosemite headquarters	59 25
Incidentals	4 84
Error in payment (redeposited by Secretary).....	26 66
Le Conte Memorial expense.....	277 10

(The Le Conte Memorial Committee has temporarily defrayed \$100 of this expense, which amount is included in "Cash received from Secretary.")

Total expenditures	<hr/>
	\$1,372 48
Cash on hand May 10, 1902.....	467 56
	<hr/>
	\$1,840 04

Respectfully submitted,

J. N. LE CONTE,
Treasurer.

REPORT OF THE LE CONTE MEMORIAL COMMITTEE.

The Le Conte Memorial Committee has been actively at work, and has already raised the following amount:—

Cash	\$2,426 55
Subscriptions	404 00
Total	<u>\$2,830 55</u>

The committee has had several plans submitted by prominent architects, and the final plan will be decided upon shortly. A representative of the committee, together with the architect selected, will probably be in the Valley when the Yosemite Commissioners meet there in June, and a site for the proposed lodge will then doubtless be selected.

It will require active work to raise the balance of over \$2,000 required to complete the fund, and it is earnestly requested that all the members interest their friends and secure all the additional subscriptions possible.

Respectfully submitted,

WM. E. COLBY,
*Secretary and Treasurer of the Le Conte
Memorial Committee.*

Dated May 15, 1902.

KING'S RIVER OUTING.

The Outing Committee herewith presents a few additional matters relating to the King's River trip. Members of the party will find that it will be possible to change and leave, at either Visalia or Sanger, the costume worn on the train from the city, and can there don their camp clothes, which is advisable before taking the long, dusty stage-ride. Arrangements will be made so that anything left, as suggested, at the points named, will be cared for until the return.

Those persons intending to join the main party leaving San Francisco on the 23d of June are advised to purchase their tickets at the Southern Pacific ticket office, 613 Market Street, after June 15th, and some little time prior to the date of departure, in order that they may make reservations for sleeper at the same time. It must be remembered that these special-rate tickets will only be on sale at points where the secretary is notified parties desire to leave.

The membership of the party is practically complete, and in the future the only chance to join the party will be to have one's name placed on a provisional list and take chances of being substituted in the place of some one who finds it impossible to go on the trip.

Mail, to reach members of the outing party while in the King's River Cañon, should be sent "Care of Sierra Club, Millwood, Fresno County, Cal."

At the present writing there is nothing which can be

foreseen to prevent the outing from being a most complete success in every respect, and the finest trip that was ever taken in the mountains of California is assured.

Very respectfully,

WM. E. COLBY, *Chairman,*

J. N. LE CONTE,

E. T. PARSONS,

Outing Committee.

NOTES AND CORRESPONDENCE.

In addition to longer articles suitable for the body of the magazine, the editor would be glad to receive brief memoranda of all noteworthy trips or explorations, together with brief comment and suggestion on any topics of general interest to the Club. Descriptive or narrative articles, or notes concerning the animals, birds, forests, trails, geology, botany, etc., of the mountains, will be acceptable.

The office of the Sierra Club is at Room 45, Merchants' Exchange Building, San Francisco, where all the maps, photographs, and other records of the Club are kept.

There are but a few copies on file of No. 3, Vol. I., of the BULLETIN. The Club would like to purchase additional copies of that number, and we hope any member having extra copies will send them to the Secretary.

A FLORA OF KING'S RIVER.

By especial request, Miss Alice Eastwood consented to write an article on "A Flora of the South Fork of King's River from Millwood to the Head-Waters of Bubb's Creek." The directors of the Sierra Club have decided to publish this article under a separate cover and charge for the same the sum of seventy-five cents per copy. This publication will be ready for circulation about June 10th. It will contain a number of cuts showing certain ferns of the King's River region. It will be valuable to all persons interested in flowers. Copies may be had by applying to Mr. William E. Colby, Secretary of the Sierra Club.

TREES ALONG THE TULARE TRAILS.

For general information regarding the Sierran woods, John Muir's two books, "The Mountains of California" and "Our National Parks," are the best, and no mountains and woods have a better interpreter. Miss Eastwood's paper on the plants of the King's River Cañon, printed as a separate publication by the SIERRA CLUB, by especial request, will be exactly what the party needs for a handbook. Miss Eastwood has collected in the cañon more thoroughly than any other botanist. For the trees and shrubs seen on the journey from Sanger to Millwood and for the "zones" of woody plants in the Sierras, the reader is referred to the article on "Zonal Distribution in the Southern Sierra," printed in the SIERRA CLUB BULLETIN,

June, 1901. A limited number of reprints of this remain in my hands, and are freely at the command of such as are interested in the subject.

The following is a complete list of the Conifers found in the Sierra woods from the King's River southward:—

*In the "Forest Belt" (4,500 to 8,500 feet altitude):—

Pinus ponderosa, YELLOW PINE.

Pinus ponderosa, var. *Jeffreyi*, BLACK PINE.

Pinus Lambertiana, SUGAR PINE.

Pinus monophylla, NEVADA NUT PINE.

Abies concolor, BLACK FIR.

Libocedrus decurrens, INCENSE CEDAR.

Sequoia gigantea, "BIG TREE."

Torreya Californica (or *Tumion Californicum*), TORREYA (OR CALIFORNIA "NUTMEG").

In the "Subalpine Woods" of the Boreal Zone (8,500 to 11,500 feet):—

Pinus contorta, var. *Murrayana*, TAMARACK PINE.

Pinus monticola, MOUNTAIN WHITE PINE.

Pinus Balfouriana, FOXTAIL PINE.

Pinus flexilis.

Pinus albicaulis, WHITE-STEMMED PINE.

Abies magnifica, SILVER FIR (OR RED-BARKED FIR).

Abies magnifica, var. *Shastensis*, SHASTA SILVER FIR.

Tsuga Mertensiana, MOUNTAIN HEMLOCK.

Juniperus occidentalis, MOUNTAIN JUNIPER.

The Pines are distinguished by long needles, usually more than one in a cluster, wrapped at the base by a thin sheath.

The Firs are known by their oblong cones, all erect on the topmost branches; needles single, no sheath.

The Hemlock is distinguished by its short, single needles, hanging cones, and slender, drooping tops.

The Cedar has small scalelike, opposite green leaves in a flat branch, and bark like a "Big Tree."

The Big Tree by its size, cinnamon-colored bark, scalelike, scattered leaves, and cypress-like cones.

The Juniper by its scalelike leaves and small fleshy cones, like blueberries.

The Torreya has long, sharp needles and a fruit like a green plum.

The writer has botanized over the great mountain land

* See "Zonal Distribution," BULLETIN, June, 1901, p. 301.

south of the King's River, in the Kern, Kaweah, and Tule river basins, nearly every season since 1895, and will here indicate some of the best localities for observing the above species of trees. This region is the true home of the Big Tree. Excluding the Tule River and the southern part of the Kern, where few of this year's party are likely to go, one may find thirteen groves of Sequoia, all on the slopes of the five forks of the Kaweah River. Two of these, the Giant Forest and that on the Mineral King road, are the largest that exist.

The most interesting trail south of the King's River watershed is that from the General Grant Park to the Giant Forest and Mineral King, via Alta Meadow. About two miles west of Big Meadows this trail starts for Halsted Meadow and the Giant Forest. Around the Big Meadows is a pure forest of Tamarack Pine, known by its small cones and two leaves in a sheath. Near and below the gap into the North Kaweah is *Abies magnifica* (the variety *Shastensis*, more common than the type, occurs everywhere intermingled with it). These two species indicate the Boreal, or the same zone as the country about the Tuolumne Meadows. Descending, the first grove of Sequoias appears near the level of Dorst Creek. Across the creek on a bold promontory one can see the Redwood Saddle grove, containing many fine Sequoias. Passing among the trees of the Forest Belt, one ascends again into the Boreal, north and about Halsted Meadow. From Halsted Meadow to the Marble Fork one is again among the trees of the Forest Belt. Black Firs, with leaves longer and broader than the Silver Fir, and forming a flat branch instead of spreading in every direction, Sugar Pines, Cedars, Yellow Pine, and one small grove of Sequoias are passed. Ascending to the Giant Forest, you are in the most beautiful woods of the Forest Belt in the Southern Sierra, as well as the largest grove of Sequoias.

A long rest here, with side excursions, will be enjoyed. Passing eastward through Panther Gap, the trail rapidly rises a thousand feet, where you enter among fine trees of *Pinus monticola* and the Silver Fir. Beyond Alta Meadow a new species of pine—the Foxtail Pine—will be seen at the left among the rocks of the ridge high above the trail. The trees are scattered, dwarfed, with tops bending up the mountain. The Boreal continues with slight interruption until you near the Middle Kaweah, beyond which is Redwood Meadow, a beautiful Sequoia meadow. Along the Cliff Creek trail are more Big Trees; and after the crossing is made and a fine

glacial moraine is passed, you ascend Deer Cañon, rich in flowers. At its head is Timber Gap and fine woods of the sub-alpine Silver Fir and Mountain Pine. Beyond are the brightly-colored peaks around Mineral King and Farewell Gap. From Mineral King, by road toward Three Rivers, the woods change again to the Forest Belt. About Atwill's Mill, on this road, is a Sequoia grove, originally one of the largest. After the road enters the chaparral, it recedes again and passes the lowermost Sequoias of Redwood Cañon. Here in the same ravine is *Torreya*, with its dark, glossy, prickly leaves. Southward across the great bushy cañon of the East Kaweah still other groves of Sequoias can be discerned.

The finest groves of Foxtail Pine are east of the Western Divide, at the southern base of the great Kaweah peaks, and west of Sheep Mountain on the Mt. Whitney trail. They form the upper fringe of the woods at timber line. *Pinus albicaulis*, the most nearly alpine of the Coniferæ south of the King's River, only appears at rare intervals, dwarfed and scattered, among the rocky corries and high cañons. The Nut Pine, besides its remarkable occurrence in King's River Cañon, is found rarely along the Kern River cliffs and eastward. The Juniper is along the trail south of Farewell Gap, and occasional about Mt. Silliman and Mt. Whitney.

Stanford University.

WILLIAM R. DUDLEY.

A WINTER TRIP TO KING'S RIVER CAÑON.

Most of us born in California know Nature only in brown and yellow and green; it is not given to us to watch her asleep in winter robes of white. It was the wish for a glimpse of her in the guise our fathers were favored to see her in, that last December led myself and my brother, Mr. R. H. Kelley, into her mountain realm. Christmas morning found us at breakfast among banks of snow a few miles from Millwood.

The day is all but the shortest of the year; we have far to go and come; we shoulder our packs and push on. How still the woods! how fresh the frosty air! how beautiful and strange to us the snow! There is a creek that drains a meadow this side the high ridge east of Millwood; the creek was ice: we walked on it, all ragged and twisted,—for stones and grass and sticks had had their way in its midst. We were like children. And up the steep meadow, at its top, was much snow, where first it covered the trail. Thus the old path of a dozen summer tramps took on new fashions, for which one pair of eyes could never suffice.

Luncheon at Long Meadows cabin,—Long Meadows, still, serene, mild, yet we must break thick crusts of ice to get our water. And then, who having crossed it does not remember, a half-hour up from Ten-Mile Creek towards Tornado Meadows, the great, quiet, piny plateau?—the same as in summer, yet so different, whether really or because we chose to have it so. For but little snow was here; indeed, we kept on our coats hardly ever the whole trip through. But Tornado Meadows was all snow, so thick, so soft, so glistening. The solitude was most solemn; the great recess of snowy, matted logs and shivered stumps where is said to have risen first the whirlwind that gave the place its name, calls up Jötunheim and the Norseland giants. A stag springs through the brush and stands across an open gulch to watch us,—long stands there, and we watch him, a noble fellow, a stag of eight, I think. We were glad we had no gun. Was not our pleasure in seeing him one with our satisfaction in having the mountains to ourselves, as if the world were ours for a while?

Christmas supper, better than turkey and plum-pudding, on a slope looking over the meadow fading into darkness; a fire too generous for the weather, but burning in the true spirit of camp-fires; long sleep on fir boughs, bed too good for the best of men; verily, a Christmas ever to hold in mind. The next night found us at Rattlesnake Camp, an hour beyond Boulder Creek, and the next night we passed at Camp Kanawyer, in King's River Cañon.

The trip had been one of the most curious variety to us. Most of the small creeks were frozen solid, scenes we had known before only through pictures; yet the air was very mild, and at Boulder Creek almost like early summer. Much depended on the direction of the slope. Kennedy Meadows, 7,000 feet (I think), with a southern exposure, we found quite open, in contrast with Tornado Meadows close by on the north side of the same ridge. But the creek that drains the former babbled delightfully through icy banks and crystal pendants.

Mr. Kanawyer had thrown his hospitality at Millwood on ahead, and bidden us make free with his camp on Copper Creek. Here we spent two nights. The day between (it was Saturday) we spent in one of the most fascinating scrambles I have ever known, up the river to the fine fall in what is sometimes called Paradise Cañon. Every one remembers the magnificent sheer walls of this chasm, and the tumbling cascades in the river. Pity that the water was so low;

nevertheless, the falls were lovely, and our photographs show plainly the snow on the rocks at their base. Yet we had sweated on the way up as if it had been July.

The rest of the afternoon we passed in replenishing, with usury, Mr. Kanawyer's woodpile. The next day (Sunday) we began our return march about noon, with a circuit to include Roaring River Falls, which are low but ideal in their beauty of granite setting, and which gave us a most satisfactory photograph. This same afternoon we got, also, pictures of two scenes that gave us more of the delight of novelty than any others. One was a cascade in Granite Creek all choked with ice,—I cannot describe it any further. The other was the strange union of ice and rock in some places in the river where there was a gentle ripple. The ice had gathered thick around the rock, whether on the shore or in midstream, and then had been carved out by the current into knobs or tassels (quite symmetrical, and big enough to fill a teacup) that made you a massive crystal fringe. Yes, there was one other thing as new and charming to us; that was the grass and low shrubs incrustated with great jewels of snow. Yes, and the snow of the ground in its three formations,—fine, like sand, coarse, like big gravel, and flaky, like wafers of ice.

Sunday night found us at the foot of the cañon, Monday night near a great field of snow in the redwoods of Lockwood Creek; for out of Boulder we took the old lower trail, now little used, through Windy Gorge, Lockwood Creek, and Redwood Creek, instead of Kanawyer's new trail through Kennedy and Tornado meadows. Much of this is the wildest unaxed forest country imaginable.

In Long Meadows we heard a jocund bray, and found the camp equipment of a hunting party, but the other-worldliness of our journey was unspoiled by meeting the men themselves. Tuesday night brought us to Huckleberry, and the greatest part of Wednesday we spent in company of the giants of the General Grant Park. Mr. and Mrs. Kanawyer were expecting us at Millwood with a hearty welcome, and we must admit that we had no longing that Wednesday evening for our bi-daily stew of bacon, dried beef, rice, and bread-crumbs. This night it rained for the first time in two weeks. Our only disappointment is that we saw no snow-storm, not even the falling of a single flake, all the time we were out. Yet, from the point of view of safety, I suppose we were very fortunate.

I cannot forbear to add just a word about the next day, when we left Millwood, still afoot. It was showery, so we

rather looked for something fine to view when we reached the top of the ridge. Yes, there it was: not the magnificent sea of fog that we gazed down upon from the same place two years ago,—with island and cape and bay where the hills made the coast-line, with the wind in the pines to give sound to the rolling breakers on this mist-ocean's shore,—but a marvelous vista between the broken sky above and the long reach of hill and plain below, prodigal in beauty of color and form,—cloud against peak, cloud against cloud, wisps of cloud caught in hillside thickets, clouds being born of wet little valleys and rising to join their fellows in the sky, columns of rain between cloud and earth, rents in the clouds where the sun streamed glorious through;—you cannot applaud these Titan shows, you stand mute with thankful reverence.

TRACY RANDALL KELLEY.

ICE-CAVES.

In a recent number of the *National Geographic Magazine* there appears in the Geographic Notes an article about curious ice-caves in limestone, which reminds me of my experience with ice-caves in the lava regions of California.

In the summer of 1886 I was in charge of the topographic work for the United States Geological Survey, mapping the Modoc lava fields, in Modoc and Siskiyou counties. (A rough sketch of a portion of this map will be found in Vol. II, No. 6, of the *SIERRA CLUB BULLETIN*.) At Yreka we were told of a body of ice in a cave about half-way across the lava bed, where we could obtain water. The country is very rugged and dry. In most cases the lava is sparsely wooded, but sometimes not even a tree can be seen to enliven the dreary waste of lava and pumice. The distance is about forty miles across the lava-bed from Butte Creek to Dry Lake.

Upon leaving Willow Creek, the last water, we filled our water-barrels for precaution. The road or trail was along the edge of the lava cliffs upon a bed of pumice. The contrast between the dark lava and white pumice was very marked, and especially trying to the eyes in the heat of the sun.

A day or two of this work soon began to lower the contents of our barrels, and we arrived at a point where we thought we might find the ice-cave. We were at first somewhat bewildered at such a quest, but one of the party noted the flight of some birds and we reasoned that water must be near. Following this general given direction, in a short time we found a small but regular beaten trail, and taking this, it led us right down under the lava. We went down some seventy-

five or a hundred feet on an incline of about twenty-five or thirty degrees. Here the atmosphere was much cooler and a great relief from the heat and glare outside. When we became somewhat accustomed to the darkness, we saw below us a pool of water fifteen or twenty feet long by about the same in width, and on the farther edge quite a block of ice.

With the thermometer at 120 degrees on the surface above, one can imagine the luxury of this unexpected draught of ice-water.

We picked up a few pieces of the ice and returned to our companions. One of them had been decidedly sick for a few days, and when we suggested a dish of crushed ice he looked extremely miserable. To see his surprised, bewildered expression when we exposed the ice was something to remember.

Making the cave our base camp, we mapped the surrounding country, occupying and naming the highest peak Hoffman (after Prof. John D. Hoffman).

From this peak we saw quite a body of water to the south completely surrounded by lava ridges and obsidian cliffs.

We camped afterwards for some time there, and found the Indians called it Medicine Lake; so we retained the name.

It is a delightful place of recreation for the geologist or the sportsman, as large mule-deer are still to be found in the vicinity, and a little west of the lake toward Mount Shasta we came across quite a band of antelope.

There seems a general cleft, or line of fissuring, extending for some distance in a regular north-and-south direction, for another ice-cave is found south of Medicine Lake in a cave or slip of this nature, and still farther south there is another near the Mayfield road. The latter is large enough to give an occasional supply of ice to the neighboring towns during the summer months.

Within a mile or two of these caves can always be found a subsidiary cinder-cone four hundred or five hundred feet in height, following along the general north-and-south break above mentioned.

MARK B. KERR.

Grass Valley, Cal., January, 1902.

NOTES CONCERNING THE BRIGHT ANGEL AND HANCE TRAILS, GRAND CAÑON OF ARIZONA.

In the vicinity of Bright Angel Hotel there are four trails that start at the rim of the Grand Cañon and lead down the precipices to the river below: (1) About twenty-six miles west of the Bright Angel Trail, starting at Bass Camp (or

Surprise Outlook), is the Mystic Spring Trail. (2) The Bright Angel Trail, which begins at the hotel of that name. (3) Sixteen miles east of Bright Angel Hotel may be found the Grand View Trail, with the Grand View Hotel (or Berry's) near by. (4) Three miles and a half still farther east Hance's Trail begins its descent to the chasm below. The rough sketch map on page 80 of this number will indicate the relative positions of these trails.

A description of the Mystic Spring Trail may be found in "Sierra Club Bulletin," Vol. III, No. 4 (June, 1901). The following notes will concern themselves with the Bright Angel Trail and the Hance Trail, or New Hance Trail, which is also known as the Red Cañon Trail. (I have omitted all mention of two other trails in this vicinity, because both are closed. One is the Old Hance Trail, starting from the same point as the New Hance Trail, but working down by a series of gorges to the west. For five years past it has not been used because of washouts. The other one is called the Tanner Trail, and is still farther to the east, only a few miles west of the Little Colorado River. This trail, also, is now completely closed.)

THE BRIGHT ANGEL TRAIL.

On December 29, 1900, we started from Bright Angel Hotel, with J. R. Halford as guide. The trail starts right at the hotel and goes east for about one hundred feet, then zigzags down a fault in the cliff. Soon we came opposite to a magnificent yellow limestone wall four hundred feet high and a half mile long. This stratum measures several hundred feet in thickness and overlays a stratum of red sandstone, into which we soon descend by our precipitous trail. The magnificent promontory called "The Battleship Iowa" is in this formation, and thrusts its prow into the abyss. We work down a gorge, with this leviathan battleship on our left. Down, down, with new precipices hemming us in, we still descend. Soon the trail becomes exceedingly steep, and we dismount, letting our animals get down as best they may.

The next formation is blue limestone. This formation has the red-sandstone tinge, however, due to the stain from the red sandstone above, my guide says. The view of the opposite cliffs is always magnificent. To our right and across the chasm is a red-sandstone pile capped by a pillar of yellow sandstone. The Bright Angel Cañon (a part of the great north-and-south fault down which we are working) is directly opposite us, and its chasms are dark and forbidding, in spite of the bright sunlight that streams into their depths. Up

this gorge many claims have been located rich in copper, gold, and silver. Through all this vast stretch, east and west, north and south, as far as the eye can reach, not a tree is to be seen. Here and there we pass a spruce, a piñon, a cedar, but all these trees are small, and make no impression on the distant landscape.

Below the blue limestone is a frangible shale of marked green color. Here we come to a broad plateau, where are located the Indian Gardens, well known to all explorers. Springs gush from the earth, and there are old irrigating ditches, some of them still carrying water. Willows abound. Here the Indians tilled the ground not so many generations ago. My guide says, "Most anything can be grown here."

We could at this point take a trail to the left, which would lead us out over the plateau to its edge, whence we could look down over a granite cliff upon the river below. But our errand takes us to the river itself, and our path follows the slender stream from the Indian Gardens. Looking back from the Indian Gardens through a narrow chasm, we see the hotel far above, the smoke from the hotel chimneys giving signs of life. Still descending, and veering to the east, we leave the extensive plateau beyond the Gardens, and are in a stratum of carboniferous sandstone. Under the lee of a huge cliff of this rock we tie our horses, for the trail from this point to the river is too steep and difficult for quadrupeds. We have traversed four miles of our journey. It is now half-past 11; so that this part of the trip has occupied two hours.

Almost directly opposite this tying-place, across the gorge, are a number of cliff-dwellings, built into the sandstone wall. Their neat and careful masonry gives them a most attractive look. On the way back Halford holds the horses at this point, and I go across to explore. A four-minute slide down the rocks and a stiff ten-minute climb up the opposite talus brings me to the cliff into which the dwellings, or granaries, are built. I sketched them as best I could, and, climbing along a rocky ledge, explored one tier of them. The ledge, or embrasure, was one hundred and twenty feet long, with a height of between three and four feet from the floor to the overhanging rock. This particular ledge was about twenty feet above the foot of the cliff.

The first room that I entered was five by six feet in size, with an adjoining closet measuring two by three feet. Then came a vacant space of a few feet, succeeded by two rooms about five by six feet each, with entrances at each side. The mortar that had been used had been made of red-sandstone

dust, with a slight admixture of straw. It was in no sense a cement, for it was brittle, and with ease any of the walls might be pushed in. About one hundred feet above the ledge which I explored were other dwellings. Had time permitted, it is possible that I could have reached these also. Halford told me that down in the cañon below the Indian Gardens and around the point from the cliff-dwellings are the remains of ditches. This shows that in earlier times water could have been brought very close to where the cliff-dwellings, or caches, are situated. My guide's opinion was that these structures were caches pure and simple, and that the Indians sealed them up and thus protected them from rats and other vermin.

Resuming our journey to the river, we walk, or rather slide, down a precipitous talus. At the head of this talus, looking eastward along its edge, we see in the outline of the overhanging cliff of carboniferous sandstone a huge but perfect profile of a man's face. The resemblance was a striking one, and I wonder that photographs of this and of the interesting cliff-dwellings are not to be seen in the collections of pictures of this region.

At the bottom of the talus we reach Pipe Creek, which carries a slender stream of pure water. We then follow the creek bed, and soon see a beautiful fall seventy feet high. Before long Pipe Creek opens into Spring Garden Gorge, which carries a heavy stream of water, and in a few minutes we behold these clear and sparkling waters emptying into the Colorado River. The river is lower now than at any other time of the year, and is three hundred feet wide. The granite formation began where we left our horses, and our descent from that point measures fifteen hundred feet.

In the sand beside the river we see the tracks of mountain sheep. We find also some tiny dots in the incrustated sand, in groups of four. These are the tracks of the kangaroo rat.

THE HANCE TRAIL.

Of the three trails that I have traversed, I should place the Mystic Spring Trail as by long odds the most interesting, both scenically and geologically. Next in interest would come the Bright Angel Trail, and last the Hance Trail. But let it not be supposed that I consider the Hance Trail in even a slight degree uninteresting. Far from it. Moreover, if one can secure the offices of Captain John Hance, the builder of this trail and a pioneer in this region, as guide, information will be forthcoming that may be had in no other way. Cap-

tain Hance has a rare sort of humor, too, and his quaint tales of adventure are likely to live long after he himself is in the grave. Halford characterizes him thus: "Hance tells big stories, but don't expect people to believe 'em, and when he sets down to tell gospel truth, you kin reckon that he's tellin' yer gospel truth."

It was in company with Captain John Hance that I started down the Hance Trail, on December 29, 1901. The Captain came over from his cabin to the Grand View Hotel, where we mounted our horses. Thence we made our way along the rim eastward for two miles to Hance's Hotel, and thence a mile and a half farther eastward to the beginning of the Hance Trail, or New Hance Trail, also known as the Red Cañon Trail. (As already stated, the Old Hance Trail is washed out and impassable.)

All along the rim the dominating object of vision is Ayer Peak, a great pile of yellow sandstone, somewhat isolated from the main wall, its features and outlines constantly changing as one moves to the east or to the west. In descending the Hance Trail, we shall move to the east of Ayer Peak.

At the head of the Hance Trail are to be found a neat cabin and good stables, built and owned by Captain Hance. Our path to the river will be eight miles. The first mile is a picturesque rim-trail, and we gradually work out upon a promontory, down whose farther side we shall make a rapid descent. Ayer's Peak keeps us company on the left, and to the right Bissell Point and Moran Point stand out majestically. Looking west as we move down, we can see in the farthest distance the Cannon Copper Mine, on the Grand View Trail. An interesting feature is a sandstone chimney half a mile east of Hance's cabin, and near the trail—a pillar of rock separate from the main cliff, but showing what Hance claims are unmistakable signs of old Indian fortifications. A cache, or granary, can be seen under the main point of rock near by.

Making steady descent, we reach the top of the blue limestone at 11 A. M. (we left Grand View Hotel at 8 A. M.), having descended the lower strata of the red sandstone by following a precipitous wash filled with boulders.

From this point on we find ourselves in irregular strata, which line each side of the steep and difficult wash. We reached the river at 12:30 P. M., where we found L. D. Boucher (one of Hance's men), a tent, a fire, burros, and supplies.

WILLIAM A. BREWER.

GRAND CAÑON EXCURSION.

ADDITIONAL INFORMATION.

The information to be given under this heading was promised on the first page of the little pamphlet that formed a sort of prospectus of the excursion. So short a time, however, has passed since the appearance of the pamphlet that there is not a great deal to add.

The attention of all the excursionists is again drawn to the importance of notifying us as soon as convenient of an intention to join the main party of July 14th; also of heeding carefully the other points referred to on page 21 of the pamphlet. Such action on their part will enable us to provide carefully for the comfort of every excursionist, both *en route* and after reaching his destination. It will also enable us to send down an advance-agent in good season, if the size of the party warrants it. Then, again, too long a delay may be a bar to joining this main party of July 14th, as the party will have to be limited, and, with two or three exceptions, all yet heard from have expressed a desire to go on this date.

HOUR OF MAIN PARTY'S DEPARTURE—NOTICE TO KING'S RIVER PARTY.

The main party just referred to will leave San Francisco on Monday, July 14th, on the limited, at 9 A. M., unless subsequent notice is given of a change of hour. Before July, however, a new train may be put on, making a close connection for the cañon, and, if so, that train will be our probable choice. And if the party numbers fifty, it can be transferred without delay from the main line to the cañon.

A number of the King's River party having expressed a desire to join this main party *en route*, their attention is drawn to the starting-time of the Santa Fe trains from San Francisco (where they must join us) to the south. The 9 A. M. train from San Francisco, for example, is very rapid, leaving Fresno at 2:40 P. M. In this connection, it should be added that any of the King's River party who go on to the Grand Cañon, or any of the Grand Cañon party who go first to King's River, should purchase their tickets through to Grand Cañon and stop off at Fresno, going thence to Sanger (fourteen miles from Fresno by the Southern Pacific) and King's River; and they should announce their intention to do so to Mr. Colby, Secretary of the Sierra Club, or Mr. Chetwood, Chairman Grand Cañon Outing Committee. If those who go to King's River subsequently decide to go to Grand Cañon, they can do so, but will have to pay the same fare from Fresno

to Grand Cañon as they would have paid from San Francisco. The Santa Fe rates for this excursion will be those already announced in the pamphlets (\$35 for fifty persons, and \$40 for from ten to fifty). And these rates will prevail not only from San Francisco, but from Los Angeles, and be the same from any intermediate point between either city and Grand Cañon.

ADVANCE PARTIES AND INDIVIDUAL PARTIES.

The advance party spoken of in the pamphlet as probably starting early in June seems at present rather inclined to join the main party. Any excursionists desiring to start earlier than July 14th are asked to so state and name the time preferred, when, if possible, a party of ten will be made up, after which another of the same size will follow. In this connection, a correction should be made of a statement in pamphlet, made through a misunderstanding. Parties of ten and less than fifty will be entitled to a \$35 rate only if a total of fifty has been reached when small party starts, and not to a rebate if the total number subsequently becomes fifty.

QUESTIONS ANSWERED.

The answers to questions promised in the pamphlet, and not already answered, concern hammocks, food, and the possibility of leading entirely a camp life after leaving the cañon.

Hammocks, being light weight and easily packed, might be quite useful in some cases. Those unaccustomed to sleeping on the ground often find easier and more comfortable repose in a hammock, above insects that may creep about below, and also above dampness after a shower.

No food-stuffs are necessary or recommended on this trip, except a little chocolate for an emergency, packed in tin or tinfoil, and perhaps some coffee. Both these articles are to be obtained of Goldberg, Bowen & Co., who advertise in this BULLETIN, and whom therefore excursionists are asked to patronize. Several lunches, and perhaps one or two breakfasts, will for the majority be cold meals. Those who desire to add to them a cup of hot coffee are advised to take a pound can of Borden's condensed coffee. One of these cans will make ten or a dozen average-sized cups. Sugar and milk being condensed with the coffee, the beverage is instantly made by dissolving a teaspoonful in a cup of boiling water. Served fresh, it makes a fair substitute for coffee, and when fresh milk or cream can be added an excellent one, as may be ascertained at Maskey's on Kearny Street.

As for those who propose to make the trip entirely a camping one, except for three or four days at the cañon, the plan is quite feasible. One can procure food at Flagstaff, and after leaving that point travel in any desired direction, taking pack-animals and food, as well as tent or bedding. In fact, most of this trip may be made in any style preferred. The tourist may take nearly every meal in a hotel or restaurant, and share a spring mattress with the companion of his choice; or he may enjoy home-cooking *al fresco*, and sleep on Mother Earth—with possibly an occasional companion not of his choice.

GENERAL PROSPECTS OF THE EXCURSION.

These are excellent. Dr. Jordan, one of our directors, is, unfortunately for us, engaged for work at Samoa this summer with the U. S. Fish Commission, and so sends regrets that he "cannot take part in this grand excursion of the Sierra Club." But we hope to have representatives from one if not both universities. Charles F. Lummis, editor of *Out West* and author of "The Great Southwest," "Land of Poco Tiempo," etc., writes from Los Angeles that, while he cannot speak at all positively, he hopes to go. C. Hart Merriam, of the Smithsonian Institution, goes to King's River, but has been specially invited to join us later, and those who met him on last year's outing in the High Sierra and listened to his description of the fauna of that region know what an acquisition he is to any party. In a pamphlet describing the San Francisco Mountain region, Dr. Merriam is reported to have said that within twenty-five miles northeast of the summit of the range are specimens of flora and fauna of every life-zone from the arctic to the semi-tropic. No other known area of equal size on the globe makes such a showing, or offers greater interest and opportunity to the botanist and biologist, to say nothing of the geologist, while if the twenty-five mile radius be extended completely around the circle, there is a great deal within it to attract also the ethnologist and archæologist.

Mr. John Muir, our President, is also booked for King's River Cañon. But as the outing in that direction will be nearly over when our party passes Fresno, it is hoped the President of the Club will join us there, or come on a little later. He cannot doubt what his welcome will be. His late book, "Our National Parks," is spoken of in another page. But admirable companion for an outing as that volume has been admitted to be, we do not want to take it along as a substitute for the author.

FUTURE ANNOUNCEMENTS.

As the general plan of the trip and the various possible variations from it have now been so fully covered, further information should be superfluous except for individual cases. A circular letter, however, with final instructions, will probably be sent to all members of the excursion. And during Saturdays in June some one will be prepared to answer questions between 1 and 1:30 P. M. at the Club headquarters, room 45, Merchants' Exchange Building, San Francisco.

The supply of Grand Cañon pamphlets being almost exhausted, members of the Club not going on the excursion or needing the pamphlets will confer a favor by mailing their copies in one-cent unsealed envelopes to Sierra Club Grand Cañon Excursion, Merchants' Exchange Building, San Francisco.

JOHN CHETWOOD,

Chairman Grand Cañon Outing Committee.

SAN FRANCISCO, CAL., April 25, 1902.

MR. J. S. HUTCHINSON, JR.

MY DEAR SIR: In hurriedly compiling at the end of our little pamphlet on the Grand Cañon excursion some of the "literature" on the region, I omitted to refer to Mr. Muir's recent book, "Our National Parks." In this book the President of the Sierra Club appeals irresistibly to all lovers of nature, animate or inanimate, and whether his readers be learned or unlearned. A more charming, helpful, or enthusiastic companion for an outing than this volume would be hard to find.

Mr. Muir simply treats the Grand Cañon as a part of our system of national parks, and his reference to it is brief, but I am sure it will interest all readers of this BULLETIN, especially those who go with us to the Cañon. And I beg that you will reprint the following selection from "Our National Parks" in the BULLETIN. By so doing you will, I am sure, oblige the other members of the Club, as well as,

Yours sincerely,

JOHN CHETWOOD.

JOHN MUIR'S IMPRESSIONS OF THE GRAND CAÑON.

(Extracts from "Our National Parks.")

"The Grand Cañon Reserve of Arizona, of nearly two million acres, or the most interesting part of it, as well as the Rainier region, should be made into a national park, on account of their supreme grandeur and beauty. Setting out from Flagstaff" (nowadays from Williams), "a station on the Atchison, Topeka and Santa Fe Railroad, on the way to the

cañon you pass through beautiful forests of yellow pine—like those of the Black Hills, but more extensive—and curious dwarf forests of nut-pine and juniper, the spaces between the miniature trees planted with many interesting species of eriogonum, yucca, and cactus. After riding or walking seventy-five miles through these pleasure-grounds" (which we degenerate tourists will traverse by rail), "the San Francisco Mountains, abounding in flowery parklike openings and smooth, shallow valleys, with long vistas which in fineness of finish and arrangement suggest the work of a consummate landscape artist, watching you all the way, you come to the most tremendous cañon in the world. It is abruptly countersunk in the forest plateau, so that you see nothing of it until you are suddenly stopped on its brink, with its immeasurable wealth of divinely colored and sculptured buildings before you and beneath you. No matter how far you have wandered hitherto, or how many famous gorges and valleys you have seen, this one, the Grand Cañon of the Colorado, will seem as novel to you, as unearthly in the color and grandeur and quantity of its architecture, as if you had found it after death, on some other star; so incomparably lovely and grand and supreme is it above all the other cañons in our fire-molded, earthquake-shaken, wave-washed, and glacier-sculptured world. It is about six thousand feet deep where you first see it, and from rim to rim ten to fifteen miles wide. Instead of being dependent for interest upon waterfalls, depth, wall-sculpture, and beauty of parklike floor, like most other great cañons, it has no waterfalls in sight and no appreciable floor space. The big river has just room enough to flow and roar obscurely, here and there groping its way as best it can, like a weary, murmuring, overlaid traveler trying to escape from the tremendous, bewildering labyrinthic abyss, while its roar serves only to deepen the silence. Instead of being filled with air, the vast space between the walls is crowded with Nature's grandest buildings,—a sublime city of them, painted in every color, and adorned with richly fretted cornice and battlement, spire and tower, in endless variety of style and architecture. Every architectural invention of man has been anticipated, and far more, in this grandest of God's terrestrial cities." (Page 34.)

A SHORT CUT TO THE GRAND CAÑON.

Nearly every railroad across the continent is at some point close to objects of great natural or archæologic interest. This is especially true of the Santa Fe Railroad across Northern Arizona, with petrified forests near by, and historic and prehistoric ruins, to say nothing of that wonderland, the Grand Cañon of the Colorado, by far "the greatest thing in the world" of its kind. From Williams or Flagstaff, on this line, the brink of the chasm is reached, some seven thousand feet in air. To arrive at the river, requires several hours of decidedly adventurous clambering. A much shorter road runs from

Peach Springs, Arizona. A few years ago this route was patronized to some extent, being open all the year, except during the short rainy season; but the heat was apt to be excessive in summer, though the air of all this region is remarkably dry, pure, and invigorating. For prolonged physical exertion it surpasses that of California.

From Peach Springs to the cañon the road for about half the distance used to be very fair. Then it became poor, and during the latter part of its course was about as rough as cañon roads in the path of freshets are apt to be. But the slower rate of progress had ample compensations; for, as the road degenerates, the surroundings become more and more impressive. Indeed, in leaving the station one leaves the tame and commonplace. Wildness, succeeded by grandeur, soon begins to take their place. As the road descends, the walls of Peach Spring Cañon rise. Then they tower aloft, and finally, through no unworthy portal, usher silent mortals into the depths beyond. We seem to reach the very heart of things. This whole region has been molded by Titanic forces. It is Nature's mighty workshop, and many of her secrets are laid bare; for these stupendous walls and the strata of age succeeding age tell the geologist the story of the earth. Nowhere else is the story so complete. The mouth of Peach Spring Cañon opens on a tremendous picture, with the great, mysterious river in the foreground. It thunders and surges downward over a granite bed and pent up between granite walls a hundred and fifty yards apart and several thousand feet in height; and from below they look perpendicular. Indeed, they are so for many hundred feet. At this great depth there are some places where daylight does not linger, and at all times vast shadows brood over the stream. It calls to mind the familiar but weird and striking lines,—

" Where Alph, the sacred river, ran,
Through caverns *measureless to man*,
Down to a *sunless sea*."

Again the gorge opens out, and the water flows through deep but quiet pools. Before the cañon itself poetry falters, and certain separate features of it are all that sober prose may attempt. Palette, pen, and camera are all inadequate, and the best photography of large or distant objects has many limitations. One difficulty is that all standards of measurement fail. This cañon so dwarfs all others that there is nothing in nature to compare it to. At many points the walls of Yosemite would not reach half-way up its sides, nor would those of the Royal Gorge in the State of Colorado,

through which pass the trains of the Denver and Rio Grande. And the altitudes of the side cañons are in places fully as great. From Sunset Peak, which apparently belongs to Peach Spring Cañon, one can look down on any point near the river; and farther up Peach Spring Cañon is a still loftier crest. The Grand Cañon alone is more than two hundred miles long and about fifteen miles from brim to brim, with walls at many points ranging from four to over six thousand feet in height.

Opposite the mouth of Peach Spring Cañon "Solomon's Temple" lifts its majestic dome. Farther up, Mount Emma is pointed out. Near by are "The Tower of Babel" and other mighty peaks, while on the left the river makes an abrupt bend and whirls away toward the Black Cañon. In the immediate neighborhood several objects stand out prominently, all accessible, some by a moderate walk, others after a vigorous climb. To Prospect Point, near the river, is a short and in this climate not difficult ascent, which well repays the effort. After a few minutes' climb the cañon world around begins to unfold like a map, disclosing new beauties at every turn of the path.

Diamond Creek Cañon, opening out of Peach Spring Cañon, rather resembles in some ways the Black Cañon of the Gunnison in Colorado. Its walls in places rise sheer nearly three thousand feet, and are barely twenty feet apart. One can walk up this cañon for miles, and its inner recesses the sun does not seem to penetrate at all, shut out by massive walls or the towering crags that crown them. Diamond Creek flows down this defile. It is well named. The water is cool and sparkling in the warmest weather, and extremely palatable. It is probably charged with mineral to some extent, though not perceptibly. Traces of iron and soda are plentiful about.

Among the landmarks of this place are Pyramid and Sunset Peaks. The half-dome of Sunset is gilded by the last rays of the sun after all other points are in shadow, as seen from the lower cañon. From the summit of this mountain the panorama is magnificent, but whoever scales it would best allow a day for the trip. So clear is the air that the range of vision is almost limitless. One looks down on Solomon's Temple across the river, and even on the loftier benches that flank it. A winding silver thread far below marks the river's course, and a perfect network of cañons branches out on either side. These cañons are practically inaccessible, except from the river; but by a little steam or

electric launch, or by a good row-boat at some seasons, the river could readily be crossed at a few points, and by skirting either bank many a side cañon would open to the explorer.

JOHN CHETWOOD.

LETTER FROM CAPT. N. F. MCCLURE.

MANILA, P. I., April 9, 1902.

To the Editor SIERRA CLUB BULLETIN, San Francisco, Cal.

DEAR SIR: I still have the two Sierra Club record-boxes given me by Mr. Elliott McAllister, but have not yet had an opportunity to deposit them on any prominent peak. I hope to be able to place one of them in position myself, and to turn the other one over to some one who will place it in case I am unable to do so. Thus far I have been stationed at a distance from the mountains, and have not been able to get away on a climbing trip. I do not despair, however, of being able to go yet before I return.

We have some very respectably sized mountains here, too. I will give you a few below:—

Mount Arayat	3,200 feet
Mount Pinatubo	5,200 feet
Mount Tabo (Luzon)	4,200 feet
Mount Isarog (Luzon)	6,900 feet
Mount Mayen (Luzon)	6,200 feet
Mount Nangtud (Panay)	6,800 feet
Mount Midia-as (Panay)	7,100 feet
Mount Banajao (Luzon)	6,700 feet
Mount San Cristobal (Luzon)	6,200 feet
Mount Tagaig (Luzon)	5,100 feet
Mount Tuguen (Luzon)	5,300 feet
Mount Data (Luzon)	8,100 feet

These mountains are given in Spanish figures, which are more or less unreliable, but there are doubtless many high mountains in these islands—mountains rising about 6,000 feet. Mount Arayat, though not very high, rises alone from the center of a vast valley, which valley is almost flat. Hence Arayat, though not of great altitude, is in reality one of the most prominent and most noticeable peaks of the archipelago. It is plainly visible from Manila.

Hoping to soon give a better account of my stewardship, I will close with best wishes for the Sierra Club and its continued success.

Yours sincerely,

N. F. MCCLURE,

Capt. and Q. M., 5th Cavalry.

FORESTRY NOTES.

 EDITED BY PROFESSOR WILLIAM R. DUDLEY.

NEW FOREST RESERVES. The late President McKinley created the Wichita Forest Reserve (57,120 acres) in Oklahoma Territory, on July 4, 1901. On August 8th he declared a reserve in Utah of 86,400 acres, which has been named the Payson Forest Reserve. These are numbered 40 and 41, respectively, in the list of forest reserves. An addition of 142,080 acres was made to the great Cascade Reserve in Oregon in 1901. Over 1,275,000 acres have been withdrawn from sale and entry in the Kootenai River region of northern Montana and Idaho, pending survey for a new forest reserve. This lies along the Canadian border, between Flathead and the Priest River forest reserves.

INCREASE THE RESERVES. The California Water and Forest Association at its annual meeting, December 20, 1901, passed the following resolution:—

"We request our Senators and Representatives in Congress to urge the enactment of such legislation as will result in the immediate Reservation of all Government forest lands within the State of California."

The Sierra Club made a similar request in 1899; and its BULLETIN pointed out the advisability of reserving all Government land about the head-waters of the Sacramento River and its tributaries before the lapse of another year. The reasons for such requests are now stronger than ever. The fact that large transfers of timber land in Butte, Tehama, and Plumas counties have been recently made—two of these involving 100,000 acres—indicate that active lumbering will follow. Indeed, this activity appears on every hand. During the month of April the entire timber-land property of the Northern Pacific in Washington, amounting to 225,000 acres, was transferred to millmen; and an Eau Claire (Wis.) company began lumbering on a 32,000-acre tract of redwood in Del Norte County, California. If the Water and Forest Association will lead in a petition to the proper authorities, asking for the reservation of all forest land in the State, many of the organizations in California interested in the

development and maintenance of her natural resources will join it. The timber-land in California under control of the Nation or the State should be, we believe, a large proportion of the total amount, not only as a guarantee for the proper protection of the water-supply, but for the conservative influence the trained foresters in charge may have on the lumbering over adjacent private property. There is evidence that this influence has already become one of the most important in the whole history of the development of the U. S. Forestry Bureau. Five millions of acres of private and State timber-land are at the present time managed according to the advice and working-plans of this bureau.

THE LACEY For three years the American Forestry
TRANSFER BILL. Association has urged the transfer of all administrative as well as scientific forestry work on the national forest reserves from the U. S. Land Office to the Bureau of Forestry. The Secretary of the Interior has recommended it in his annual report, and President Roosevelt strongly advised the transfer in his recent message. (See BULLETIN, Jan., 1902, p. 72.) On February 18th, Representative Lacey introduced House Bill No. 11,536, "to transfer certain forest reserves to the control of the Department of Agriculture (Bureau of Forestry), to authorize game and fish protection, and for other purposes." On March 15th, it was reported back from the Committee on Public Lands, and was then referred to the Committee of the Whole. It seems probable that it will pass. If so, the readers of this journal well know that it establishes the most important principle possibly relating to forestry on the Pacific Coast,—namely, the scientific management of the Government reserves.

THE NATIONAL Two bills have passed the Senate providing
PARKS. for a detail of troops to protect the Mt. Rainier National Park in a manner corresponding to the protection afforded to the Yellowstone, Yosemite, and other parks; also appropriating \$25,000 for the improvement of the park roads, bridges, and trails.

The Sundry Civil Bill carries an appropriation of \$6,000 for the Yosemite Park, \$2,500 for the General Grant Park, and \$10,000 for the Sequoia Park. The last-named sum will be chiefly devoted to the continuation of the carriage-road, by way of the North and Marble forks of the Kaweah, to the Giant Forest.

The Southern Appalachian park, if established, will be

known as the "McKinley National Park and Forest Reserve." A bill appropriating \$10,000,000 to purchase not more than 4,000,000 acres along the Appalachians from Virginia to Georgia and Alabama was introduced, in December, 1901, into the House; and a second bill, appropriating \$5,000,000 for the purchase of 2,000,000 acres was soon after introduced into both House and Senate. The park has received favorable indorsement from forestry experts, from the Secretary of Agriculture and the Secretary of the Interior. President Roosevelt also sent a special message to Congress, asking that body to favorably consider its establishment. Secretary Wilson has pointed out that the purchase does not create a precedent, "as the Government purchased in 1896 from the Blackfeet Indian tribe, of Montana, an area of approximately 615,500 acres for the sum of \$1,500,000, and on February 22, 1897, it became part of the Flathead Forest Reserve." The whole nation should be interested in preserving this region of probably the most beautiful and highly diversified types of hardwood forest trees in temperate climates. This interest is intensified, however, with the people of California from the fact that the passage of this bill will greatly encourage those who seek to have the United States purchase the Calaveras groves.

On February 19th, Mr. Woods, of California, introduced a bill into the House providing by the appropriation of \$200,000 for the purchase of the two sequoia groves above named, with powers to condemn as an alternative. It was referred to the Committee on Public Lands, and reported back favorably on March 6th with amendments. The bill was thereupon referred to the Committee of the Whole House. The California Club, of San Francisco, which has brought the merits of this question before Congress and the Nation for three years with such admirable spirit, still maintains its interest in it.

INSTRUCTION Increased instruction is probably the best indication of the permanent growth of forestry
IN FORESTRY. ideas in this country. At the New York State College of Forestry there are twice as many students reported as last year—thirty-eight in number. The Yale School has over thirty—a considerable increase over last year,—and the Forestry Association reports nearly fifty colleges in America as offering instruction in forestry at the present time. The University of California has secured the services of Dr. Fernow, of Cornell, for its summer session, who will deliver nine evening lectures on practical topics in his specialty,

besides daily lectures, during three weeks between June 26th and July 16th.

Part V, Twenty-first Annual Report of the United States Geological Survey, is devoted to the forest reserves, and is the first of its reports on the reservations that deal with California. The Lake Tahoe and the Stanislaus reserves are reviewed as to their forests, standing and cut over. These are the published results of a systematic examination of the timber-lands in question by experts, and will be followed by similar reports on the Sierra reserves and those of Southern California. The completion of these surveys is a matter of the utmost consequence to California, as no practical work in forestry looking towards the self-support of these woodlands will be inaugurated by the Government until the Geological Survey has finished its work upon them and settled their boundaries.

A remarkable style of men's leggings that surpasses other kinds in durability; in their ease of adjustment; in their newly devised fastening, leaving nothing to catch on the brush; in their correct hygienic fit to the leg with enough elasticity to be comfortably close without compressing the veins; and in the keeping of all dirt out of the shoe.

These leggings will be sold at \$1.00 per pair and to out-of-town purchasers can be mailed for 20c postage, so that mail orders (accompanied by measurement around the largest part of the calf of the leg over the trousers and a remittance of \$1.20) will be promptly filled.

Also an alpenstock that won't break and that isn't too heavy.

Fishing tackle specially contrived for the great fishing streams of King's River Canyon;

And axes with scabbards; also, hunting knives, will be furnished by

S. J. DEAN

1502 Market Street

San Francisco

WAKELEE & CO.

Leading Druggists

MAKE A SPECIALTY OF SUPPLYING USEFUL
HANDY REQUISITES FOR OUTING TRIPS

A Foot Powder . .

That prevents Blisters, Aching and Sweating of the Feet;

A Tablet of Kola . .

That Stimulates and makes long Journeys without Food possible;

Toilet Creams . .

In collapsible Tubes convenient for Packing;

Roll Ups . .

For Hair Brush, Soap, Comb, &c.;

Dr. Noe's Poison Oak Salve . .

A necessary Remedy

ARE A FEW OF THE MANY USEFUL ARTICLES
THAT MAY BE FOUND AT THE STORES OF

WAKELEE & CO.

Bush and Montgomery Streets and Polk and Sutter Streets

About your Photo Supplies

That is our whole business. We carry everything in stock that an amateur needs—from the simplest requisite up to the anastigmatic lenses. We should like to have you consult with us in the making up of your outfit. Perhaps we can help you. We can give you the benefit of an experience that is the result of our always having given our undivided attention to keeping abreast of the times in things photographic.

The Development of Your Negatives

We devote our most conscientious efforts to this department and spare no time or pains to secure all there is in your exposures for you. We refer you to Sierra Club members who have had us do their work.



R. A. LEET
512-514 Thirteenth Street
Oakland, Calif.

Everything that is Practical and Necessary in

OUTING GOODS

(See circular letter)



We have fished the King's River and
can suggest what you want in . .

FISHING TACKLE

The most comfortable article in your
camping outfit is an

AIR MATTRESS



CLABROUGH, } 538 Market St.
GOLCHER & CO. }
SAN FRANCISCO

RAMBLES AROUND SHASTA AND A CLIMB TO THE SUMMIT

Ought to make several red letter days in the calendar of the Sierra Club. The mighty sentinel lifts its head above three states and the view from the top is one of

SURPASSING GRANDEUR

The journey to the foot of Shasta
is memorable : : : :

The Southern Pacific

crossing and recrossing the Sacramento and offering magnificent views of the wild canyon. An outing in that region will not be complete without a trip to the McCloud on the branch line from Upton. No such trout as live on the riffles of that picturesque river.

SECURE ILLUSTRATED LITERATURE AT

The Southern Pacific Information Bureau

613 MARKET STREET, SAN FRANCISCO

E. O. McCORMICK
Passenger Traffic Manager

T. H. GOODMAN
General Passenger Agent

PUBLICATIONS OF THE SIERRA CLUB

- No. 1.—Articles of Association, By-Laws, and List of Members.
- Nos. 4 and 5.—Maps of Portions of the Sierra Nevada adjacent to the Yosemite and to King's River, 1893.
- No. 8.—Table of Elevations within the Pacific Coast, 1895, by Mark B. Kerr and R. H. Chapman. *Price, 25 cents.*
- No. 12.—Map of the Sierra Region, May, 1896. *Price, \$1.50.*
To be had of Theodore S. Solomons, 508 California Street, San Francisco, California.
- Nos. 2, 3, 6, 7, 9, 10, 11, 13, together forming Volume I. of the SIERRA CLUB BULLETIN.
- Contents of Volume I.—Ascent of Mt. Le Conte; Address on Sierra Forest Reservation; California Outing; Crater Lake, Oregon; Diamond Hitch; Explorations North of Tuolumne River; Forest Reservations; From Fresno to Mt. Whitney, via Roaring River; From Gentry's to El Capitan and Yosemite Falls; Grand Cañon of the Tuolumne; Head-waters of King's River; Kern and King's River Divide; King's River and Mt. Whitney Trails; Knapsack Tours in the Sierra; Mt. Bernard; Mt. Tahoma; Mt. Whitney Trail; New Grove of Sequoia Gigantea; Notes on the Pine Ridge Trail; Route up Mt. Williamson; Search for a Route from the Yosemite to the King's River Cañon; Sources of the San Joaquin; Three Days with Mt. King; Through Death Valley; Through the Tuolumne Cañon; Tramp to Mt. Lyell; Upper Sacramento in October; Notes, Correspondence, and Reports.
- Nos. 14, 15, 16, 17, 18 and 19, together forming Volume II. of the SIERRA CLUB BULLETIN.
- Contents of Volume II.—Ascent of the White Mountains of New Mexico; Basin of the South Fork of the San Joaquin River; Conifers of the Pacific Slope, Parts I and II; Day with Mt. Tacoma; Early Summer Excursion to the Tuolumne Cañon and Mt. Lyell; Expedition of Prince Luigi Amedeo of Savoy to Mt. St. Elias; Explorations of the East Creek Amphitheater; From Mt. Rose to Mt. Shasta and Lower Buttes; Kaweah Group; Lava Region of Northern California; Mountain Trips: What to Take and How to Take It; Neglected Region of the Sierra; Observations on the Denudation of Vegetation—Suggested Remedy for California; On Mt. Lefroy August 3, 1896; On Mt. Lefroy August 3, 1897; Philip Stanley Abbot; Taking of Mt. Balfour; To Tehipite Valley from the King's River Grand Cañon; Up and Down Bubb's Creek; Wanderings in the High Sierra Between Mt. King and Mt. Williamson,—Parts I and II; Woman's Trip Through the Tuolumne Cañon; Yosemite Discovery; Notes, Correspondence, and Reports.
- No. 20.—Volume III., No. 1, pp. 1 to 118—price \$1.00.—Ramblings Through the High Sierra (Reprinted from "A Journal of Ramblings," privately printed in 1875); Editorial Notice; Ouzel Basin; Forestry Notes.
- No. 21.—Ramblings Through the High Sierra. (Specially bound; without Editorial Notes, etc.)
- No. 22.—Volume III., No. 2, pp. 119 to 188.—Lake Tahoe in Winter; Ascent of "El Yunque"; Another Paradise; King's River Cañon Trail Notes; Ascent of "Matterhorn Peak"; Reports; Notes and Correspondence; Forestry Notes.
- No. 23.—Volume III., No. 3, pp. 189 to 270.—Parks and Peaks in Colorado; The Work of the Division of Forestry in the Redwoods; The Mazamas on Mt. Jefferson; Wagon-Trips to the Sierra; The Big Basin; The Re-Afforesting of the Sierra Nevada; The Descent of Tenaya Cañon; An Ascent of Cathedral Peak; A Glimpse of the Winter Sierra; Notes and Correspondence; Forestry Notes.

PUBLICATIONS OF THE SIERRA CLUB — *Continued.*

No. 24.—Volume III., No. 4, pp. 271 to 339.—The Mazamas on Mt. Rainier; Lassen Buttes: From Prattville to Fall River Mills; Zonal Distribution of Trees and Shrubs in the Southern Sierra; Mt. Washington in Winter; Round About Mt. Dana; Notes and Correspondence; Forestry Notes: Reports.

No. 25.—Volume IV., No. 1, pp. 1 to 75.—Joseph Le Conte in the Sierra; El Capitan; Camp Muir in Tuolumne Meadows; The Sierra Club Outing to Tuolumne Meadows; In Tuolumne and Cathedral Cañons; The Great Spruce Forest and the Hermit Thrush; From Rédding to the Snow-clad Peaks of Trinity County; Trees and Shrubs in Trinity County; Notes and Correspondence; Forestry Notes; Reports.

No. 27.—A Flora of the South Fork of King's River from Millwood to the Head-Waters of Bubb's Creek.
Price, 75 cents.

On receipt, in good condition, of a full set of the numbers comprising Volumes I. or II., together with the sum of \$1.25, a bound volume will be forwarded, postpaid.

Each number 50 cents.

Volume I., No. 3, and Volume II., No. 1, are out of print.

Members may have additional copies of the bulletins at half rates.

Copies of the above publications may be had on application to the Secretary, Merchants' Exchange Building, San Francisco, Cal.



PUBLICATIONS OF THE SIERRA CLUB

Number 28

SIERRA CLUB BULLETIN

Vol. IV

No. 3



FEBRUARY, 1903

SAN FRANCISCO, CAL.

1903

SIERRA CLUB BULLETIN

Vol. IV.

FEBRUARY, 1903

No. 3

CONTENTS:

	PAGE
AMONG THE SOURCES OF THE SOUTH	
FORK OF KING'S RIVER <i>J. N. Le Conte</i>	177
Plates LXVIII., LXIX.	
WITH THE SIERRA CLUB IN KING'S	
RIVER CAÑON <i>Charlotte Sanderson</i> . .	185
Plate LXX.	
RED-AND-WHITE PEAK AND THE	
HEAD-WATERS OF FISH CREEK. <i>Lincoln Hutchinson</i> . .	193
Plates LXXI., LXXII., LXXIII.	
MT. WHITNEY, WHITNEY CREEK, AND	
THE POISON MEADOW TRAIL . . <i>Willis Linn Jepson</i> . .	207
Plates LXXIV., LXXV.	
A NEW-YEAR OUTING IN THE SIERRA. <i>J. E. Church, Jr.</i> . .	216
Plate LXXVI.	
THE ASCENT OF VOLCANO MAYON. <i>Andrew Venable</i>	228
ORGANIZATION OF THE SIERRA CLUB	235
REPORT OF OUTING COMMITTEE	236
NOTES AND CORRESPONDENCE:	
A Correction	239
Place Names for Application in the Sierra Nevada. . .	239
Register on University Peak	242
Register on Red-and-White Peak	242
Letter from Capt. N. F. McClure.	242
Scarper Peak, in San Mateo County	243
FORESTRY NOTES <i>William R. Dudley</i> .	246

All communications intended for publication by the SIERRA CLUB, and all correspondence concerning such publication, should be addressed to the Assistant Editor, J. S. Hutchinson, Jr., Sierra Club, Claus Spreckels Building, San Francisco, California.

Correspondence concerning the distribution and sale of the publications of the Club, and concerning its business generally, should be addressed to the Secretary of the Sierra Club, Room 16, Third Floor, Mills Building, San Francisco, California.

MONT PELÉE

AND THE TRAGEDY OF MARTINIQUE

By PROFESSOR ANGELO HEILPRIN, F.R.G.S.

President of the Geographical Society of Philadelphia.

THIS work, almost unique in the class of exploration and scientific research, presents the first complete account of the catastrophic events of the island, whose misfortunes have so roused the sympathies of the world, and added a chapter to history as interesting as that of the fall of Pompeii and Herculaneum. Professor Heilprin's early visit to Martinique permitted him to study the scene of the major disaster very soon after its happening, while his experiences on the still burning volcano, whose crater he was the first to visit after the tragic eighth of May, and during the great eruption of August 30th, of which he was a direct observer, were such as to make the narrative describing them one of thrilling interest.

The author's qualifications as an investigator, geologist, and geographer give to the work its stamp of scientific authority, and it can safely be said that it will remain the standard work on the subject of which it treats for many years in the future.

The book, in large octavo, contains three hundred and thirty-five pages in text, and there are nearly forty full-page plates, made up in greater part of reproductions from photographs taken by Prof. Heilprin himself. Many of these reveal the volcano in its climax of eruption and in rapidly following successive stages of activity. No such record is to be found elsewhere.

8vo. Cloth, illustrated, \$3.00 net. Postage, 27 cents

Publishers: J. B. LIPPINCOTT COMPANY
PHILADELPHIA

AUTOBIOGRAPHY OF PROFESSOR JOSEPH LE CONTE

BERKELEY EDITION. LIMITED TO 500 NUMBERED COPIES

Will be published in February, in handsome *de luxe* style, for Pacific Coast Press, San Francisco, by D. Appleton & Company, New York.

Orders will be registered and numbered as received. As this edition is strictly limited, it is advisable to send in orders without delay. Address—

PACIFIC COAST PRESS

Room 1, Flood Building, San Francisco



SKINNER

HAS REMOVED to

801 Market St., cor. Fourth

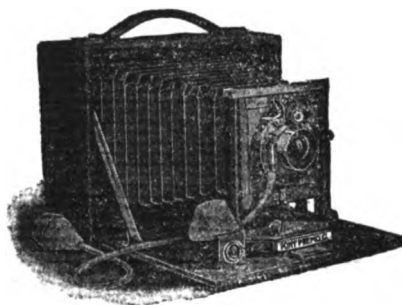
He is making complete outfits for men and women, and has imported special fabrics for the clothing.

*Special Compact Fishing
Rods and Tackle for
the Mountains . .*

AIR BEDS
SLEEPING BAGS
MOSQUITO NETS
AIR PILLOWS

SEND FOR LISTS OF OUTFITS

Our Camera and Photo- Supply Department



is complete in every respect. Developing and Printing at lowest prices for first-class work. We teach Photographing, Developing and Printing *free*.

*Amateurs welcome to free use of our
DARK ROOM*

H. E. SKINNER CO.

801 Market Street, cor. Fourth, San Francisco

Walk-Over

924 & 926 Market Street, San Francisco

111 S. Spring Street, Los Angeles



OUR SIERRA MOUNTAIN BOOT

as perfected from suggestions of a member of the Sierra Club, is certainly the best boot in America.

The stock is the best calf; the color is a beautiful shade of tan; the sole is double, and has a good extension which runs from heel to heel, giving good protection to the upper. This extension in shank enables the climber to step on sharp rocks in center of the foot without danger of hurting the boot or slipping.

For this season we will carry an assortment in stock, but advise those contemplating an outing to call as soon as possible, and if it is necessary we will make them to measure at same cost.



The price ranges from \$5 to \$7.50

It takes four weeks to get these boots made to order.

Walk-Over Shoe Co.

F. F. WRIGHT & SON

Proprietors

THE SUMMER RESORT OF THE WORLD

CALIFORNIA

has mountain peaks, mountain forests,
mountain lakes (like sapphire gems),
mountain hunting, mountain fishing.

Do these attract you?

CALIFORNIA

has a chain of seaside resorts six hundred miles long—from San Diego to San Francisco, where you can swim, and row, and yacht, and fish. Would you like to catch a leaping tuna weighing two hundred pounds on a 15-oz. rod? Others have done it, why not you?

DO YOU WANT TO TRAIN

for the Shasta trip? Try the baths of Paso Robles, the hot springs, the oak-covered hills, and put yourself in the finest trim.

*If you want to know HOW and
WHERE in CALIFORNIA*

Write for literature to any agent of the

SOUTHERN PACIFIC

E. O. McCORMICK,

Pass. Traf. Manager,

SAN FRANCISCO, CAL.

T. H. GOODMAN,

Gen. Pass. Agent,



VIEW NORTH FROM ARROW PEAK, SHOWING THE PALISADES.

From a photograph by L. N. L. Cooke

SIERRA CLUB BULLETIN.

VOL. IV. SAN FRANCISCO, FEBRUARY, 1903. No. 3.

AMONG THE SOURCES OF THE SOUTH FORK OF KING'S RIVER.

By J. N. LE CONTE.

PART I.

Of the many scores of enthusiastic "High Sierrans" who were camped on the banks of the South Fork of King's River last summer, there are certainly but few who have even a faint idea of the magnificent region in which the main branch of this stream heads. Many of course visited Mist Falls, just above the gateway to the King's Cañon; some obtained a distant view of its wilderness of peaks from the summit of Goat Mountain; and still fewer visited Paradise Valley. But the splendid mountains about the southern end of the Palisades will, I think, remain a little-known country for many years to come, owing to the exceptional ruggedness of the ridges and the great depth of the cañons.

The South Fork above its junction with the King's Cañon drains an area of 135 square miles, or the whole of the region between Bubb's Creek on the south, the Main Crest on the east, and the Middle Fork of King's on the north and west, being almost exactly twice the area drained by Bubb's Creek. For a distance of five miles above the King's Cañon it comes down through a

deep, precipitous gorge in a series of tremendous cascades. As far as Mist Falls there is a tolerable foot-trail, but above that point there is none at all until Paradise Valley is reached, two miles above. This latter point is easily reached, however, by a trail from Copper Creek Basin, which crosses the Buck Range Divide just south of Goat Mountain, descending finally nearly 4,000 feet into the South Fork Cañon at the lower end of Paradise Valley. This latter is about three and a half miles long, and at its head the river forks into two almost equal branches, the one to the right, or Wood's Creek, entering from almost due east, and draining the main crest from the neighborhood of the Kearsarge Pass on the south, to Mt. Pinchot on the north; while the left branch, which is slightly the larger, and may therefore be considered a continuation of the South Fork, comes in from the north after sweeping around the base of the Arrow Peak Group, and drains the Crest from Mt. Pinchot to the southern end of the Palisades.

It was my good fortune last summer to make two trips into this splendid region,—one by way of Paradise Valley to the summit of Arrow Peak in early June, and the other by way of the Middle Fork and Cartridge Creek in July. The party in the first instance was composed of Mrs. P. A. Kanawyer, Mrs. Le Conte, Mr. Tracey Kelley, Mr. Robert Pike, and myself. The start was made the afternoon of June 14th. Only pack-animals were taken, for in such a rugged country as that which we wished to traverse a saddle-horse is nothing short of a nuisance. The first night's camp was made at Wood's Corral in Copper Creek Basin, just at the top of the first steep ascent. Instead of taking the regular Goat Mountain trail next morning, we struck across country directly east from Wood's Camp, and without any serious trouble crossed the Buck Range Divide by a pass at least a thou-

sand feet lower than the Goat Mountain Saddle, coming out almost on the same level as the top of the Paradise Hill. From this point a steep, rough descent of 2,800 feet brought us to the river about 11 A. M. and camp was made on the edge of a meadow in a beautiful grove of pines about a mile from the head of the valley.

Paradise Valley is one of the most beautiful camping-spots to be found in the immediate neighborhood of the King's River Cañon. It is almost level, about a quarter of a mile wide, and supports a splendid growth of timber, much finer in fact than that in the lower cañon, owing to the greater elevation and better soil. Beautiful meadows abound, and the cliffs, while not so high as the Grand Sentinel, are very picturesque, averaging 2,500 feet in height.

Our objective point was Arrow Peak, the culminating point of that great mountain mass which lies between the forks of the river at the head of the valley. It had once been ascended from the north by Professor Brown, of Palo Alto, but no one had yet approached it from the south. Owing to its situation on the brink of the main South Fork Cañon, we were sure that the view from its summit would be extensive and would give a good idea of the whole river basin to the east and north. To approach it by way of the cañon on its western side was not to be thought of, for these river gorges are great consumers of time, and ours was limited. The most practicable route appeared to be along the course of a small creek which drains its southern flank, and which enters Paradise Valley by a series of graceful falls directly at its head. Just to the east of these falls is an avalanche chute up which one may climb, but which is impassable for pack-animals.

It was evident from the outset that the base of the peak could best be reached by "knapsacking it," for

although animals might be taken up by keeping far to the east, still this appeared doubtful, and might result in a waste of time. So in the afternoon Kelley, Pike, and I explored for a possible log by which the river might be crossed above its junction with Wood's Creek, and were lucky enough to find a jam at the site of the old sheep bridge.

Next morning, after a hearty breakfast (for we expected to be on starvation rations for the next two days), we all shouldered our packs, which consisted of blankets, food for two days, the camera, plane-table, and a Sierra Club register, and started up the cañon about sunrise. We crossed the river on the log jam without much difficulty, and started up the end of an old medial moraine which lay between the two branches of the river. This led up to the avalanche chute where the rough work began, though an old sheep-trail gave us some help in the brushy places. About 1,500 feet above the floor of the valley a ledge to the left furnished a means of leaving the chute and of dropping over into the main cañon of Arrow Creek, from which point we could see up the course of the stream for some distance. We were now obliged to traverse a huge talus slope and make our way down to the stream, which was followed until the base of a steep cascade was reached. Above this point the stream came down in a series of swift cascades over dome-shaped rocks, all glaciated and polished to the last degree. The stream-bed became impassable, but a convenient strip of timber along a diminutive brook furnished a means by which it could be abandoned, and at 1 P. M. we were eating lunch and resting high up on the mountain-side and in full view of the splendid cañons to the south. In the afternoon the little brook was easily followed to its head, and Arrow Creek was again reached just at the top of the falls. Above this point the stream drains a wide

desolate basin characteristic of these elevated regions; a broad valley with glaciated floor strewn with erratic boulders and struggling groups of alpine pines, and shut in on all sides by towering knife-edge ridges, at whose bases were immense piles of talus and snow. Most of the afternoon was consumed in walking up this basin, and camp was made as far up as it was possible on account of the snow.

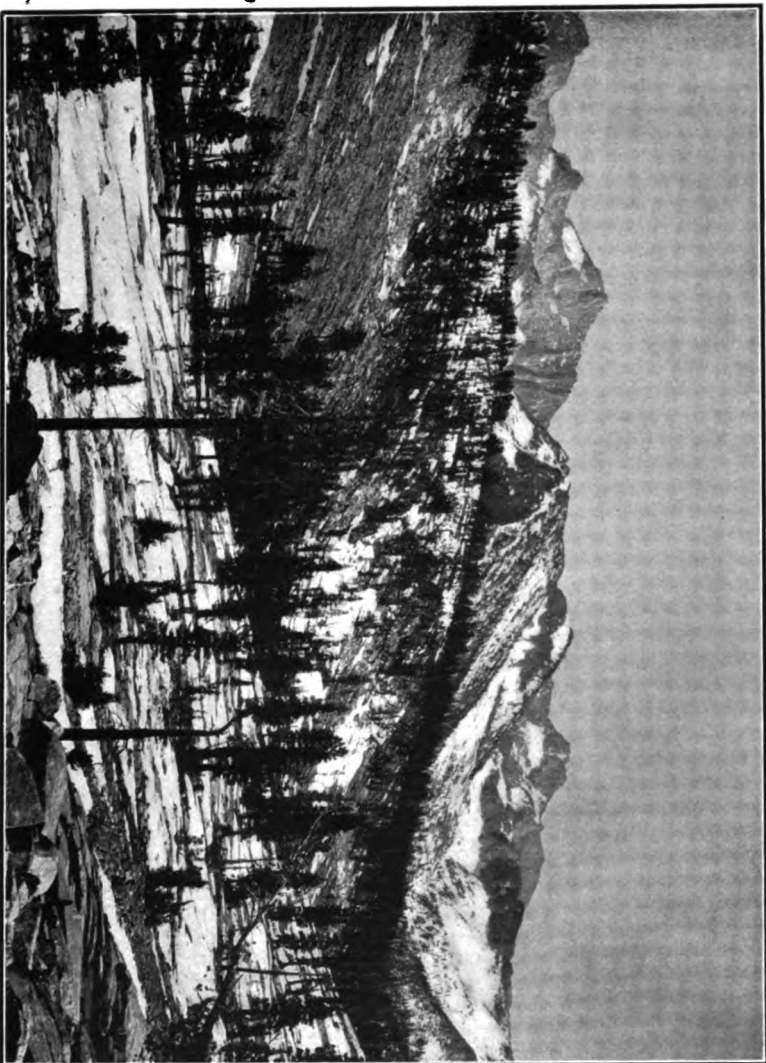
The view from this point was simply magnificent. Across the deep cañon of Wood's Creek rose the rugged masses of Mt. King and Mt. Gardiner and the host of spiry ridges in their neighborhood. Directly away from us to the southwest stretched Paradise Cañon and all its tributary gorges, walled in on the west by the spurs of Goat Mountain. Immediately in front to the north were the snow-fields of Arrow Peak, and to the northeast there towered high above us an unnamed, unknown peak guarded by splendid precipices. Our camp was 10,200 feet above the sea.

Next morning very early Kelley, Pike, and I started for the mountain, for it was necessary to make the climb and return to Paradise Valley in one day. We carried nothing with us but the camera and plane-table. Our route lay up the snow-filled valley to the east of the peak, and in the course of an hour we were abreast of its southern spurs. Arrow Peak is the highest point of a long ridge which faces the cañon of the main South Fork. From our position it was difficult to determine which was the highest point, and unfortunately we started the climb too soon. The ascent of the main slope was not difficult; so we made the best of our time, climbing rapidly over huge rock fragments and fields of hard snow. On reaching the top of the ridge what little breath we had remaining was fairly taken away by the sight of the tremendous cañon of the South Fork which now burst upon us. It

was over 4,000 feet deep where we stood ; the walls were exceedingly precipitous and of one continuous slope the whole way. Just to the right arose what appeared to be the top of our peak, but when we reached it, it was only to find the true summit a quarter of a mile to the north, and connected to our point by the meanest knife-edge that it usually falls to one's lot to traverse. We reached the lower point at 9 A. M., and it was 10 before the final summit was attained. Part of the time we navigated the serrated edge of the ridge itself, with the 4,000-foot cañon on one side and a steep rooflike slope of snow on the other. Sometimes, when the edge became impassable, we climbed along the snow-field at its junction with the rocks. The summit, we judged from the aneroid readings, was about 13,400 feet above the sea.

From this commanding point the whole course of the South Fork could be traced from its source at the foot of Split Mountain to its junction with the King's River Cañon. Far to the northeast its first tributaries headed, flowing southward and then southwest to join those coming in from the region of Mt. Pinchot, and finally entering a beautiful timbered basin directly below us on the north. After winding through meadows and groves and receiving countless snow-fed streamlets, the young South Fork cuts around the base of Arrow Peak in a cañon whose depth is rarely equaled in any part of the Sierra, finally falling into the upper end of Paradise Valley. This beautiful timbered basin was at our very feet thousands of feet below, and, though an ideal spot for camping, it appeared totally inaccessible for pack-animals from this side.

The mountains to the east of our peak were piled up in the wildest confusion—a little-known wilderness dominated by Mt. Pinchot, certainly 14,000 feet high. Across the great cañon to the north towered the gigantic



VIEW SOUTH FROM CAMP AT BASE OF ARROW PEAK.

From a photograph by J. N. Le Conte.

masses of the Palisades, from Split Mountain (14,200 ft.) on the south to Mt. Jordan (14,275 ft.) on the north. And beyond these was the practically unexplored head of the Middle Fork of King's River, the only great area of our Sierra which is unmapped. From Mt. Goddard to Mt. Whitney the whole basin of King's River lay exposed. The scene was doubly inspiring in its wintry robe of snow, and for this reason we felt repaid for the comparative difficulties of a trip taken early in June.

An hour was spent on the summit, photographing the matchless panorama, laying in angles on the plane-table, and sketching the surrounding topography. A monument was constructed, and in this our register-box (No. 41), together with Professor Brown's record of his ascent in 1895, was deposited. The time came only too soon when the return to camp became a necessity. The best route was now easily seen to be directly down the eastern snow-field to the source of Arrow Creek. The upper part of this field was too steep to glissade down without an alpenstock, but by carefully climbing down a couple of hundred feet on a long tongue of rocks we were enabled to slide for nearly a thousand feet in a few minutes. This led to the head of the stream on which we were camped, and after an hour and a half of plunging through snow, now greatly softened by the noonday sun, we arrived at our little group of tamaracks, and were welcomed by the ladies with cheers and a substantial lunch.

Leaving again at about 2:30, we easily made our way back to Paradise Valley before dark, the only exciting incident being experienced by Mr. Kelley, who, while considerably in advance of the rest of the party, almost ran into a huge cinnamon bear about a half-mile from camp.

Future climbers in the King's River district will find

no more fascinating region to explore than the great basin at the head of the South Fork. A good mule route into it should be searched out, and if none such exists one should be made. Our camp at the base of Arrow Peak I think might be reached with a pack-train by climbing out of Wood's Creek Cañon at a point about a mile and a half above Paradise Valley, and thus the falls of Arrow Creek be avoided. Then a route would have to be found down into the South Fork basin to the north. I understand that sheep have been taken over this way, but the route would not be open till August, owing to the great amount of snow. A trail up the South Fork Cañon might be built with no great difficulty, according to Mr. Stirling Bunnell, who explored a portion of it last summer. The only certain route at present seems to be from the Middle Fork side, but this is exceedingly rough and roundabout. Most of this route will be described in a succeeding article.

WITH THE SIERRA CLUB IN KING'S RIVER CAÑON.

BY CHARLOTTE SANDERSON.

The start was to be made on the evening of the 23d of June. For weeks High Sierra enthusiasts had been counting the days, for weeks catalogues of sporting goods had been arriving with every mail, and for weeks dunnage-bags had been packed and repacked in fancy. Not merely for weeks, but for months, newly initiated members had been getting themselves into training, on weekdays neglecting street-cars on the way to business, and on Sundays climbing the hills about the bay. Yet with the actual coming of the day it was as if one were scrambling to meet an engagement arranged by telephone at the eleventh hour. Articles absolutely necessary for the trip could not be found, blankets and dunnage-bags grew unmanageable, and, worst of all, expressmen remained as unmoved as if the Sierra Club sent its baggage mountainward every week in the year.

At the Oakland mole special sleepers for Fresno were filled with San Franciscans and Oaklanders to the number of a hundred and more, and with the completion of the party came informal introductions and an amused inspection of costumes. By 6 o'clock the train was in motion and a crowd of expectant mountaineers was flying away from urban haunts and habits toward the freedom of wild nature. Sanger was reached about 2 in the morning, amidst the noise of firecrackers and the felicitations of the populace. Inside the cars those assigned to

the first stages were making frantic efforts to respond to calls for passengers. Seats were filled as quickly as possible, with people dressing as they crowded in. Not a moment to lose, and away they went cheered by the bystanders, and all the more hilarious themselves for being very much mixed as to feet and haversacks and cameras. By a most happy arrangement, some little distance of the twelve-hour ride to Millwood was to be made before sunrise. The dusty San Joaquin with its low foothills lay almost transfigured under a white moonlight, and the coolness of the night air was inexpressibly refreshing. Early in the morning breakfast was served at a farmhouse, and there was the even more blessed opportunity for a wash and a change of position. Beyond Dunlap saddle-horses had been arranged for, so that a considerable cut-off might be made by trail into Millwood. Stages continued to arrive at this point from 2 to 6 during the afternoon, and between the intervals of arrivals and of bronco-riding the post-office carried on a thriving business in postal-cards and bandanas. The first night's camp was made just outside the town.

The morning's tramp lay through the General Grant National Park, beneath giant sequoias and firs hung with the greenest of moss, to the foot of "General Grant" itself, where the noon rest was enjoyed. Seven miles more were made that afternoon over a trail which still ran through a forest of great trees, often turning aside for fallen trunks of dead cedars evenly twisted like immense raw-hide quirts. Toward the end of the day at Bearskin Meadow the Club lined up for its first camp meal, cooked to a turn by Chinaman Charlie Tuck and his assistants, and served in true camp style.

The second morning the trail lay across ridge after ridge, over one especially long grade, and finally up a steep zigzag into Horse Corral, a wide green meadow at

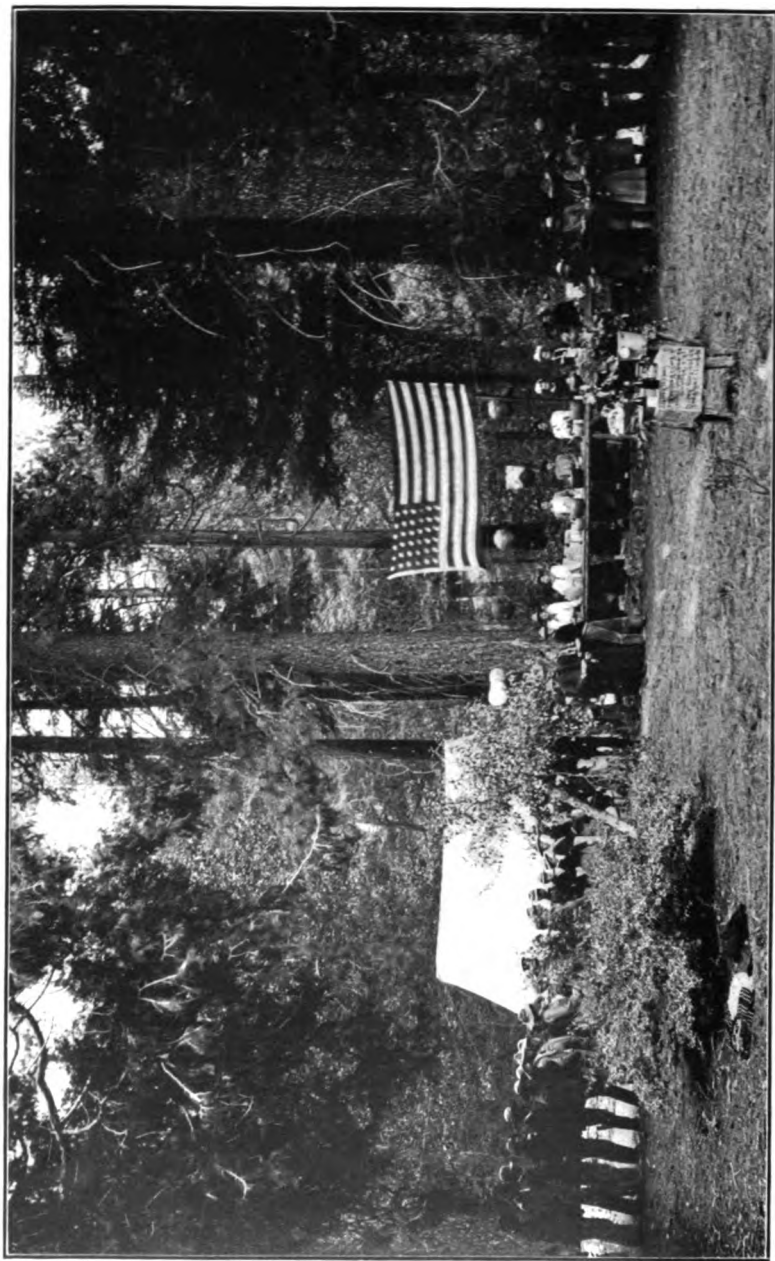
an elevation of 7,550 feet, from here onward never to stray very far from the sight of splendid mountains.

The third day's walk was to be the last before reaching permanent camp. Summit Meadows was soon reached, and from here to the top of Lookout Mountain was an easy scramble, more than repaid by a splendid view of the cañon walls rising bleak and desolate into bold half-domes or peaks. King's River was just visible, a small thread showing at the upper end. Looking toward the head of the cañon, one saw on the left the pointed crest of Mt. King; next to the right of King two others more massive in form—Tyndall and Gardiner; next the prominent solitary outline of University Peak, and still farther in the same direction the granite sides of Brewer streaked with snow. After leaving the Lookout the trail ran along the back of a long ridge, then for a distance of four miles down, down, by a succession of steep turnings into the cañon where it came out at Fox's abandoned hotel. Here the river, long announced by its roar, first came into view, slipping along with clear green lights or foaming in miniature rapids. It was still running high and the current was tremendous. From here the party made six miles to Copper Creek, tramping along the level floor of the cañon, hurrying a bit among huge boulders that reflected the heat, lagging in cool little fern meadows, but oftenest, and best of all, following close to the river-bank. At Copper Creek that night a crowd of weary High Sierrans was at home at Camp Colby. They went early to rest on mattresses of pine needles, old Grand Sentinel the headboard to the bed, and never a canopy between, except trees that could not shut out the stars or the sparkling things they made of the river rapids. That night the Sentinel, bleak and scarred by day, was turned to a mysterious pyramid.

With the arrival of the fifty-six who came by the way

of Visalia, there were nearly two hundred in camp. The place became a small village, but lists of acquaintances soon lengthened, and it was not hard to drop from town formalities into the delightful vagabond ways of outdoor existence. The railroad lay more than a hundred miles behind; mail came with no regularity, and dates and days grew hopelessly confused. Camp life on such a large scale, of course, demanded its exchange of hospitalities, and social functions of one kind or another became rather frequent. Noise and fun-making reached the climax on the Fourth of July, beginning before daylight with the firing of six-shooters and seldom flagging throughout the day. Public and official observance of the occasion took the form of a most unusual consumption of canned plum-pudding, served by volunteers looking their cleanest and wearing white caps contrived of handkerchiefs or scraps of flour-sacks. In the evening there were special festivities around the camp-fire.

At each evening camp-fire there was a programme of some sort, sometimes arranged with a view to serious talks, but oftener the spontaneous outcome of high spirits. There were burlesques and funny stunts, and a Florodora sextet done in reds and set in a background of fire. There were good talks by Mr. Warren Olney, Mr. Newhall, and Mr. Le Conte. Mr. Olney recounted the story of the founding of the Club, of the aims of the founders, and of the work already accomplished in the preservation of forests, and indicated much that remains to be done in the adjustment of the claims of the sheepmen. Mr. Newhall, superintendent of the forest, talked on the work of the department of forestry. Mr. Le Conte talked upon the Sierra Nevada range, giving particular attention to the King's River region. Among other speakers who gave pleasure to the Sierra Club and added to the general fund of information on the mountains and forests, were



CAMP COLBY—THE LINE-UP AT DINNER ON THE FOURTH OF JULY.

From a photograph by J. N. Le Conte.

Mr. and Mrs. Lemmon, Dr. C. Hart Merriam, Mr. Henry Gannett, Mr. W. K. Vickery, and Mr. Charles Keeler.

There is at Camp Colby a great rock, semicircled on one side by trees and on the other by the King's River. Early in the days of the camp it was the camping-place of five Club members; later its natural advantages as an auditorium became apparent, and as a consequence the last camp-fire meetings of the club were held on the rock. Here Mrs. Martha Foote Crow, dean of the Woman's Department of Northwestern University, called a meeting of the representatives of the Associated Collegiate Alumnæ. Here on Sundays a vesper service was held, in which the lay-reader was once Mr. Tracy Kelley and once Mr. W. K. Vickery. There will never be found a more beautiful and appropriate gathering-place for the Sierra Club, nor did John Muir ever speak of his love for the mountains in a more fitting auditorium.

Copper Creek proved to be a convenient point from which to make the shorter side-trips to Avalanche Peak, to the top of Sentinel, and to Mist and Roaring River falls. Both of these falls, though small by Yosemite standards, are most beautiful, and each in its own way. Those in Roaring River rush headlong through an opening in the solid rock into a wide green pool, while the Mist tumbles less excitedly over a long gradual incline falling more after the manner of a series of cascades.

July 2d had been the date set for the climb up Goat Mountain,—the try-out for those intending to make Brewer later on,—but for two days a storm had been threatening, and the appointed morning found a cold wind blowing a mist over the mountains. A disappointed crowd breakfasted in the cold, and afterwards did its best to warm up in a lively execution of "Prisoner's base" and "Duck on the rock." The sun remained hidden until it was too late to put the trip through. That

morning was, however, the only disagreeable one during the month in camp, and the next day dawned perfect enough to suit the most fastidious in temperatures. The trail to Goat Mountain, after rising above a steep climb over rocks and loose sandy soil, ran close along the side of Copper Creek,—at first under the round dome of Buck's Peak, then up and up, while the mountains at the south rose higher and higher. It was a splendid day, all that is fine in weather put into a single glorious sense of bracing air and of sunshine not too bright. Down into the cañon on the left ran timbered ridge after timbered ridge touched with the softest of blues, and high above them at the sky-line the crests of yet others marked by an apparently unbroken stretch of snow. Bubb's Creek Cañon lay on the east, its creek showing snow-white where it fell in cascades. After crossing Copper Creek it was a long pull to the saddle, for one turned about often for a view of the Sentinel, of Avalanche, and of Brewer, looming higher and higher. From the saddle there was a yet steeper climb to the summit. Here it was snowing; but except for showing a larger sweep to the north, the view could have been little finer than that commanded at the saddle,—a panorama in itself not easily surpassed on any of the shorter trips from the cañon.

On the morning of July 7th about ninety of the Club left for the expedition to Kearsarge Pass, forty-nine of them intending to make the ascent of Brewer. The first part of the trail up Bubb's Creek wound up a zigzag and difficult ascent, but at the top and all along the shady grade the way was delightful, following quite close to a creek that fairly bubbled with surprises. Small falls and cascades grew wilder and more and more frequent. Trout in the big pools grew bigger and bolder,—an invitation to fishermen to try their luck by the way. And the tall

flowers in those boggy meadows!—long spike-shaped purple things, wild sunflowers, pale pink thistles, brown-centered daisies, and tiger-lilies. All along the way the walls of the cañon were growing higher and higher, more often glaciated and traced here and there with threadlike falls, at first hardly noticeable on the great face of the cliffs. Finally, through the first open cañon on the right rose the crest of Brewer. This, then, was the East Creek and Camp Miller, and the day's walk was finished. Fifteen others of the party accompanied the climbers next morning as far as East Lake, and returned to the junction the same day, reporting the Brew-erites in camp at the upper end of the lake, at Camp Le Conte. The climb of Brewer is a story in itself, and the telling of it shall be left to another.

From Camp Miller the trip was continued the next day to Bryanthus Lake* and Kearsarge Pass. From the mouth of East Creek the trail rises in an abrupt ascent to Bryanthus, a wide, silent lake 11,000 feet above sea-level, shut in by snowy pinnacles and overlooked by Kearsarge Pass. On the south side of the lake, at its outlet, the large party went into camp for a week. This location was named Camp Parsons. From these headquarters many trips were made to Lake Charlotte, each party bringing back full baskets of fine trout. Climbing parties conquered Mt. Rixford, Mt. Gould, and University Peak. And between times many trout were lured from Bryanthus Lake and its inlet. Cold nights sent the climbers early to bed, yet some sparkling camp-fire sessions were held.

For treeless desolation the way from Bryanthus to the pass certainly outdid anything seen by the way. Long before reaching East Creek one had been growing accustomed to pines of the small-neededled, high-mountain va-

* Commonly known as Bullfrog Lake.

riety. Higher still, at Bryanthus, all the larger kinds were the exception, but the pass rose above timber-line. One or two gnarled trunks leaned across the boulders at the foot of the ascent, but they served only to increase the sense of rocky waste. At the top, rising high above timber-line, lay rocks and boulders piled as if by laborious artificial arrangement. The same structure prevailed also on Mt. Rixford and Mt. Gould, to the right and left. The pass itself is nothing more than the sharp edge of a ridge and very narrow, but as an observation-point it is not easily outdone. Mt. Gould, it is true, commands the wider sweep on the western side, a view that includes Owen's Lake, the river, and the town of Independence, but from the pass one looks back on something wider than a half-circle of snowy mountains reaching from the jagged pinnacles of Kearsarge on the east to Charlotte Peak on the northwest, distinguishing in turn the familiar outlines of University Peak, Mt. Keith, the Videttes, and old Brewer.

The mountaineer may be never so glib at geological formations and classifications of conifers; he may quote elevations by the page and produce photographs by the pound. But how under Heaven's dome shall he have words to express his own dumb sense of the grandeur of his mountains! How shall he say to the dwellers in the foothills anything of the rare exhilaration of mountain air, anything of the mystery of silent heights, anything of the thousand beauties that defy analysis! Fortunately he seldom tries. Mutely he pays his tribute, but when he has once felt the charm of these things he returns to them again and again with an almost gypsy instinct. There are those who believe that in this modern day the love of nature—wild nature—is vanishing from the world. Probably they read their Thoreau of a vacation on the verandas of summer resorts; at all events, they are not members of the Sierra Club.

RED-AND-WHITE PEAK AND THE HEAD-WATERS OF FISH CREEK.

By LINCOLN HUTCHINSON.

Some years ago, the writer, with a small party of friends, formed the somewhat ambitious project of conducting a systematic though necessarily superficial exploration of the main crest of the Sierra from Donner Pass southward. Our general plan was to enter the mountains each year from some selected point, penetrate to the main ridge, work southward on or near the ridge as far as our limited time would permit, and then to turn westward to the great valley again. This line of retreat would be chosen as the route of advance the following year, and the return would be made still farther south. Each year, too, some commanding peak was to be chosen as a more particular objective point, in order that we might get a comprehensive view of the region covered and be able to fill in with approximate correctness the gaps which the hurried nature of our exploration left in our knowledge of the country; in order, too, to add the inspiration of real mountain "climbing" to the other pleasures of the outing.

The task seemed a large one, for our time each year was to be limited to three or four weeks; yet slowly the larger part of the plan has been carried out. Year by year we have covered new ground, pushing southward step by step, reaching higher and grander and less-known portions of the crest, as the range swells in magnitude from north to south, till now but three years remain

necessary for the accomplishment of the main features of the plan.

Following out this general scheme of exploration, the summer of 1902 was given to a hurried trip in the section described in the title of this paper, the upper basin of Fish Creek being particularly examined and Red-and-White Peak being our specific objective point. The region may be roughly described as lying between the head-waters of the Middle Fork of the San Joaquin (rising in the Lyell-Ritter group) and the head-waters of Mono Creek (draining the main crest between Red-and-White Peak and Mt. Abbott). The northern and southern extremities of this section are already fairly well known, but midway between the two lies a region which has scarcely as yet been visited save by a few hardy sheepmen. It was in this midway region that our work lay.

Leaving San Francisco on the afternoon of July 3d, we made our way by train and stage to a lumber camp and mill known variously as "Shaver," "Shaver Lake," and "The Dam," a point well up in the foot-hills (5,000 feet) about sixty-five miles northeast of Fresno. Here our pack-animals and outfit awaited us,* and the morning of July 6th found us fairly under way with our faces toward the wilderness. Little need be said of our first week's travel. We took what is known locally as the Mono Trail, and pushed on to the main crest with but little difficulty, through a region that was generally uninteresting except in the cañon of Mono Creek. The South Fork of the San Joaquin was forded with considerable difficulty a short distance above the mouth of Mono Creek, and the head-waters of the latter stream were reached by following its right (north) bank from mouth

* We were very materially assisted in our outfitting by Mr. Joseph House, proprietor of the stage-line between Fresno and Shaver.

to source. The cañon of Mono Creek has been already described to readers of *THE BULLETIN* in the accounts of the trips of Mr. Solomons in 1894* and of Messrs. Le Conte and Cory in 1898.†

We went into camp near the spot chosen by Messrs. Le Conte and Cory, between the third and fourth "recesses," at an elevation of something over 9,000 feet. Here we came near repeating an unpleasant experience of those two gentlemen. It will be remembered by those who have read Mr. Le Conte's account of the trip that one of their animals was poisoned and died at that camp. Here, too, one of our horses was poisoned, and, though he finally recovered, he was rather a hindrance than a help to us during the remainder of the trip. It would be well for future campers to avoid those meadows as a grazing-ground.

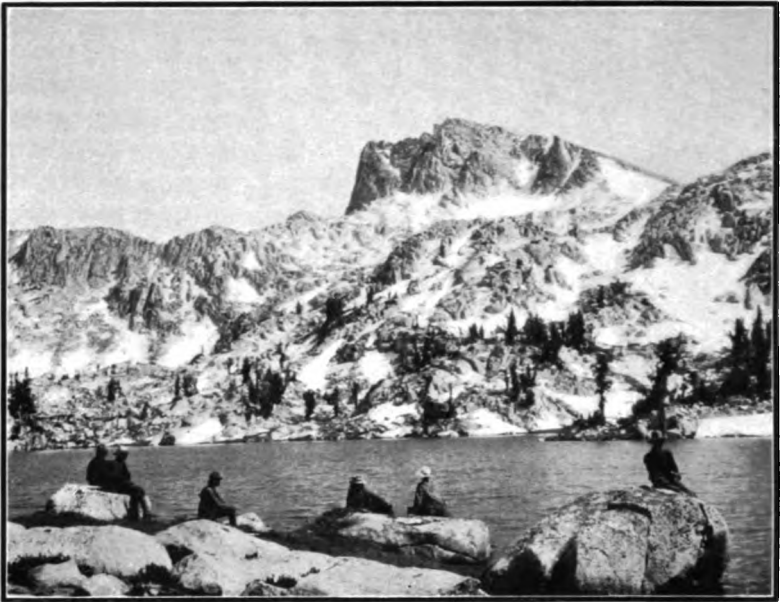
Next day was devoted to resting, reconnoitering, and planning for our next move. One party made their way up to the summit of Mono Creek Pass and returned enthusiastic at what they had seen. My brother, J. S. Hutchinson, and myself spent the afternoon in climbing a peak which rose directly north of our camp, in order to spy out the land to north and south of Mono Creek. A stiff climb of about three hours was more than rewarded by the superb panorama from the summit. We were particularly interested in the nearer view. Directly south, across the cañon of Mono Creek, we looked down into the magnificent "recesses" which Messrs. Le Conte and Solomons have so enthusiastically described. Back of them rose the giant wall which forms the divide between Mono Creek and Bear Creek, culminating in the fine peaks of Abbott, Gabb, and Hilgard. To the north, not more than two or three miles distant as the crow flies,

* *SIERRA CLUB BULLETIN*, Vol. I., p. 221.

† *SIERRA CLUB BULLETIN*, Vol. II., p. 249.

rose Red-and-White Peak and Red Slate Peak, their variegated red and brown slate contrasting most beautifully with the white granite of their neighbors. To us the particular centers of interest were Mt. Abbott, to the south, and Red-and-White Peak, to the north,—for we had not yet decided which of these two we should attempt to ascend, and it had been partly with a view to settling this question that we had climbed to our present elevation. Our time was to be too limited to permit us to ascend both, and it was necessary to choose between the two. Both looked difficult but not impossible of ascent. The southern ridge of Red-and-White Peak presented a succession of jagged impassable pinnacles, but the western and northwestern ridges looked promising. Abbott looked forbidding, but the western ridge and a tongue of snow reaching up toward the summit from the great snow-field on the northern face suggested possibilities of ascent.

A consultation in camp that evening resulted in the determination to abandon Abbott till a future trip, to make our way round to the west or northwest of Red-and-White Peak in the upper basin of Fish Creek, and to attempt the ascent of that mountain. Accordingly, next day we broke camp and retraced our steps down Mono Creek to a point near the lower end of Vermilion Valley. Our plan was to find some practicable route across the northern wall of Mono Cañon into Cold Cañon, and to follow the latter to the divide which forms the southern rim of the basin of Fish Creek. Our expectation of finding a trail which would take us from Vermilion Valley to Cold Cañon ended in disappointment, but we were able without much difficulty to pioneer a route across the divide, and after a most beautiful trip up Cold Cañon crossed over the summit into the Fish Creek Basin. The pass from Cold Cañon to Fish Creek



LAKE OF THE LONE INDIAN—NEAR DIVIDE BETWEEN COLD CAÑON
AND FISH CREEK.

From a photograph by Lincoln Hutchinson.



RED-AND-WHITE PEAK, FROM THE NORTHWEST.

(ALTITUDE ABOUT 13,000 FEET.)

Dotted line indicates the route of our ascent. From a photograph by Lincoln Hutchinson.

(elevation about 11,000 feet) is one of the most impressive I have seen in the Sierra. The ridge here runs southeast and northwest. The approach on the Cold Cañon side is through very charming country, the slope is fairly gradual, and the ascent, though fatiguing, is not difficult. The northeastern slope, however, is an abrupt drop of several hundred feet, and the difficulty was increased by masses of soft snow. It was trying work, requiring the utmost care to prevent an accident to our animals, but all our labor and anxiety were more than repaid by the inspiring view—a wild confusion of mountain masses in blue and white, crossed by dark lines of forest-covered cañon, and in the central background of the picture the grand old Lyell-Ritter group.

The dangers of the pass once safely overcome, we dropped down rapidly into the cañon of Fish Creek, passing *en route* one of the most charming little alpine lakes I have ever seen.* By mid-afternoon we went into camp at an elevation of about 9,000 feet, on the left bank of a roaring torrent, which we afterwards learned was the main stream of Fish Creek.

Our camp was in an ideal spot. Inclosed between two forks of the stream lay a little meadow of five or six acres. Below, the rapidly descending cañon ran in an almost direct line for some miles and gave us a clear vista between its V-shaped walls. The horizon-line was picturesquely broken by the massive peaks of Lyell and Ritter in the blue distance. Turning our backs to the cañon vista, a no less striking scene confronted us—a granite-walled amphitheater, culminating in a huge shaft closely resembling the Swiss Matterhorn. Not so high or so massive, but, if possible, even more rugged, forbidding, and inaccessible on the side from which we viewed

* This we have named the Lake of the Lone Indian, from the peak which rises from its western shore.

it. To right and to left rose lesser granite walls pierced by gorges, through which came tumbling in exquisite cascades the two streams which united at the threshold of our camp. Altogether a wild, romantic scene; beautiful then as we first came upon it; more beautiful in the glow of the setting sun and the shadows of deepening twilight; weird and fascinating in the brilliant, silvery moonlight which followed. A scene impossible of adequate description, but, once viewed, remaining a lifelong memory.

At this point it became necessary for our party to separate, and next day four of our companions, with the saddle-horses and such pack-animals as they needed, set out toward home via Fish Creek, the Miller & Lux trail, and Wawona. Three of us—Dr. C. A. Noble, Mr. J. S. Hutchinson, and myself—remained to explore the upper course of Fish Creek and attempt the ascent of Red-and-White Peak.

Two days we spent in camp, resting, reading, washing, mending, and building a corral in which to leave our burros, and then on Thursday morning, July 17th, we shouldered our packs and began our slow climb up the gorge of the main stream. Four o'clock in the afternoon found us on a great, bare, curiously sculptured granite plateau, from the eastern edge of which rose the two mountains which formed the center of interest for us—Red Slate and Red-and-White peaks. We had reached the level of the last straggling dwarf pines, and although time would have permitted us to press on still nearer to our destination before night, we decided to camp here, at an elevation of some 10,700 feet.

I have sometimes been asked what charm there can be in the higher levels of the Sierra, when the forests are gone and nothing remains that is not dead and forbidding, the bare crags and the snow-fields. To such a question

the surest answer would be an evening spent in such a camp as we had that night. Such a scene!—wild, desolate, cold, forbidding, fascinating! White granite for miles, black shadows in the cañons and clefts, glistening snow, and tiny lakes sparkling in the moonlight; jagged, fantastic peaks and pinnacles with alpine intensity of light and shadow, and masses of ice and snow clinging to the gentler slopes. And withal the intense quiet and loneliness of the place, a seeming new world on a new planet where man and his works are as nothing. The thrill of it all comes even now, though months have passed, and will remain through the years to come.

Sunrise on the 18th found us moving rapidly across the plateau toward the base of Red-and-White Peak. Careful examination of the mountain through our glasses had already convinced us that the northwestern ridge would probably furnish the best means of ascent, and it was, accordingly, toward this ridge that we made our way. The lower slopes were hidden by intervening ridges which thrust themselves out across our path in most annoying fashion, but after two hours of moderately easy work we had passed these obstructions and stood face to face with the peak we had come to conquer. The scene was a grand one. We stood on the edge of a *cirque* of considerable size whose walls were masses of granite and slate, trimmed with snow where the slope was gentle, and whose basin was completely filled by a little lake choked with ice. Directly before us on the opposite side of the lake was the peak rising two thousand feet above our heads and looking down defiantly upon us.

An unexpected difficulty presented itself. The lower portion of the ridge, by which we had expected to ascend, was now in full view, and, instead of continuing its gradual slope as it descended, it ended in an abrupt drop which looked impassable. For many minutes we studied the

problem through our glasses, and no certain solution presented itself. Finally, choosing the most promising route, we commenced the long, slow climb. It proved unexpectedly easy, except near the beginning and near the end. I have spoken of the half-frozen lake which formed the floor of the *cirque*. In order to reach our chosen line of ascent it was necessary to skirt the rocky, snow-covered slopes which inclosed this lake on the west. The snow was hard-frozen and perilously steep, and it was only by the utmost caution and the careful cutting of steps that we were able to reach the ridge on the opposite side. And again, as we approached the summit of the peak, there came a piece of work which might fairly be called dangerous. The ridge had narrowed to a real knife-edge, along which it was only possible to work our way astride. To our left, a sheer drop of several hundred feet; to our right, a ragged slope where a fall would almost certainly be fatal. Midway of the worst portion of this knife-edge we suddenly came to a huge block of slate set squarely athwart our course. Our route seemed absolutely blocked to any animal without wings, and for a few moments failure stared us in the face. Then, in another moment, our leader found a finger-hold near the top of the boulder and a precarious foothold at the bottom, and swinging round with a half-revolution over empty space, landed safely astride the ridge on the other side of the obstruction. Noble and I followed, and another half-hour of trying work found us on the summit, tired but jubilant.

The day was perfect, and the view beggared all possibility of description. We spent several hours enjoying it, lunching, photographing, making sundry observations to aid us in mapping the region. For some time we discussed the advisability of renaming the mountain. Being the first to set foot on its summit, it seemed our right to

name it as we chose, and we wanted something less clumsy and more euphonious than its old designation. In the end, however, it seemed wiser to make no change. The name has gained a place in the maps, and it is peculiarly descriptive of the great peak of red slate fantastically streaked with seams of white granite. The name identifies the mountain. Accordingly, in the Sierra Club register which we placed in a cairn on the summit we inscribed the name Red-and-White Peak, together with a record of our ascent.

One question of some little importance we were able to settle by our climb. It has been doubted by those who have seen the peak only from a distance whether or not it forms a part of the main crest of the Sierra. That doubt is now removed. The mountain forms a sort of triple watershed. North and northwest it slopes into the basin of Fish Creek; south and southwest, to Mono Creek; but the waters on the east and southeast drain into McGee Creek, and so down the Nevada side of the range. It thus lies on the main crest.

Another point of less interest we also partially settled. When viewing the peak from the south a week before, we got the impression that no ascent could be made from that side. Messrs. Le Conte and Cory formed the same opinion in 1898. From the summit, however, we were able to see nearly to the bottom of a chute, or chimney, on the southeastern face which seemed to present no impassable barrier. Late in the season, when the snow on that slope is mostly gone, an ascent could probably be made by that route. On the north, northeast, and northwest faces of the mountain we could see no possible line of ascent save the one we had chosen. On the southwestern face, however, is another great chute, dropping down abruptly some 2,000 feet into the basin of a small tributary of Mono Creek, the practicability of which we

proved by choosing it as our line of descent. Thus there seem to be three possible ways of reaching the summit of the peak.

Our descent was made rapidly and easily down the chimney already mentioned. Scrambling, jumping, sliding, now shuffling through loose débris, now clinging to smooth walls of slate or granite, now creeping cautiously over ice or snow which filled the shaded clefts, or plunging knee-deep into sticky snow, we dropped down some 2,000 feet in about fifty minutes.

Then began the real work of getting back to camp. The excitement of the ascent and descent was gone, the intense exertion was beginning to tell on us, and several hours still lay between us and supper. We had chosen a new route for our return. Directly west of Red-and-White Peak rises another lower mountain somewhat similar in shape. By passing around that to the south, it seemed possible to reach camp by a route which would be no longer than that of the morning and which would at the same time permit us to see new features of the country. The peak in question forms part of the spur which, running west from the main ridge, forms the divide between the tributaries of Fish Creek and those of Mono Creek. South of this divide on our map was marked a plateau, and we promised ourselves easy and rapid going as soon as we should reach it. We scrambled on and on around the southern slope of the peak. The slate had now disappeared; huge, irregular blocks of granite barred our way and made progress slow; we could find no signs of the plateau. We were getting tired and discouraged, when suddenly a most unexpected sight renewed our enthusiasm. An exclamation of surprise burst from one of the party, and we found directly before us a band of "big-horn" sheep. We had supposed the animal long since extinct in the Sierra, and at first we could

scarcely believe our eyes. The sheep seemed as surprised and interested as we, for they stopped short seventy or eighty yards distant and gazed questioningly at us. There were perhaps twenty in all. We viewed them at our leisure through our glasses, till suddenly they took fright and one after another set off with easy bounds over the bowlders and snow. It was marvelous how they went, with perfect ease and grace over masses of tumbled talus where we poor human things who had been priding ourselves on our climbing ability could only struggle along painfully and awkwardly with many a slip and fall.

Before us now lay a saddle in the ridge. On its far side surely must lie the plateau for which we were searching; gaining that, we could easily make our way to camp. Two of the sheep, separated from the main band, also made for this saddle, and we followed closely in their footsteps. Slowly we rose higher and higher; peaks beyond the saddle came into view; now the man in the lead stood on the divide. An exclamation, this time of dismay, burst from him. Instead of the plateau, there confronted us a wild array of rugged gorges and peaks glowing pink in the sinking sun, and deep down in the amphitheater below us lay an azure lake.* A beautiful scene, inspiring! But how were we to get to camp? The plateau was a myth.

A few moments' hesitation, a hasty photograph, and then our route was chosen. We must cross those gorges in a great semicircle, keeping close to their upper ends in order not to lose in elevation, and make for another saddle which lay well beyond the lake. No conversation now; steady, plodding, scrambling work; bowlders, snow, slush, —hands and feet alike called into service. At last the saddle; and with a shout of relief we saw before us, still

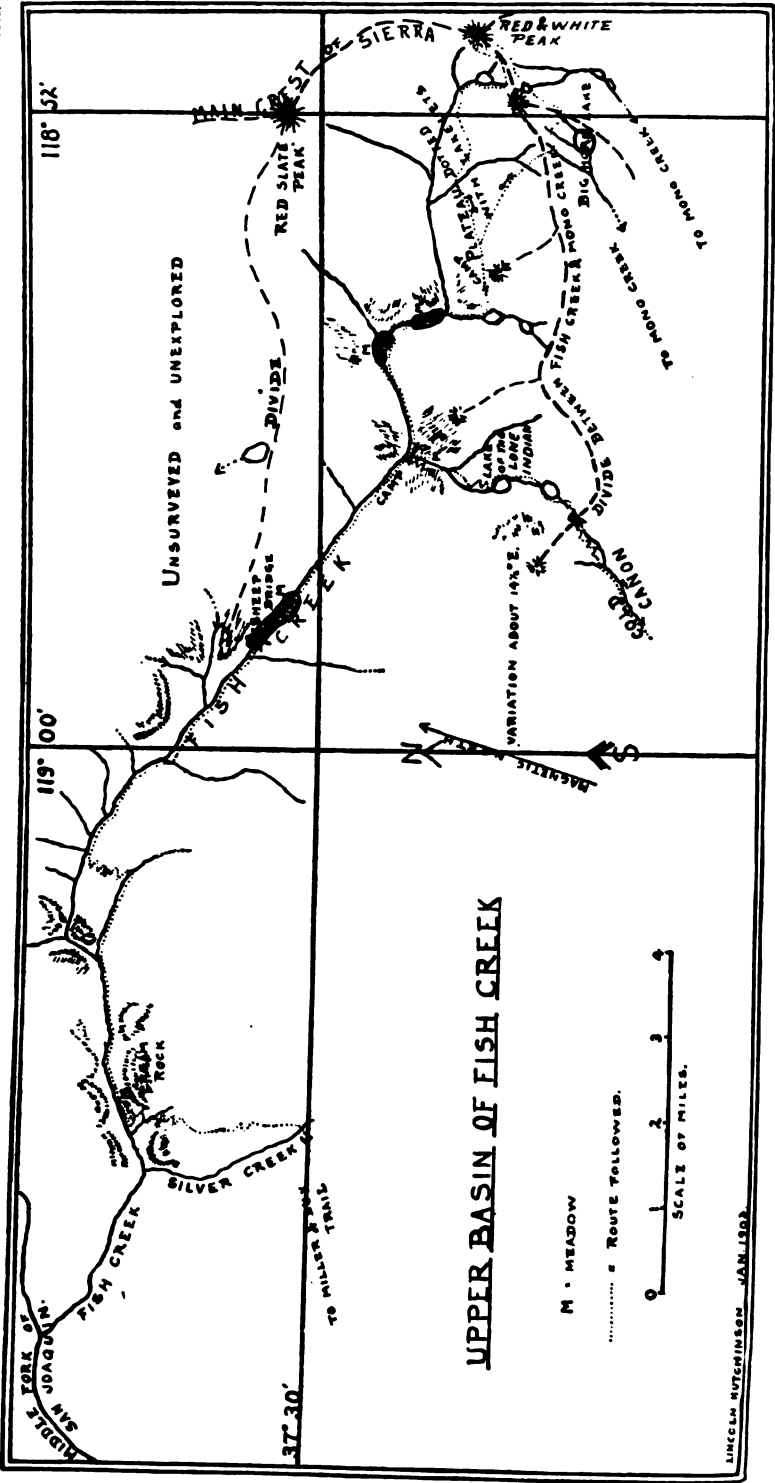
* This we named Big Horn Lake.

distant but readily accessible, our camp. Seriously fatigued, at seven o'clock we reached what seemed to us like home; a little recess in the granite plateau where lay our sleeping-bags and provisions. A hearty supper and a rousing camp-fire of dwarf pine soon did much to obliterate the unpleasant effects of our thirteen hours' tramp, and only the joy of it remained.

A rapid descent next morning took us back to our camp on Fish Creek, and after a day's rest, we turned our faces toward Wawona. Our plan was to follow down the cañon of the stream as far as possible and then to strike across to the southwest via Silver Creek and "The Pin-cushion" to the Miller & Lux trail. The cañon we found most beautiful, and it was with reluctance that, two days later, we were forced to climb out of it by a difficult trail and cross the divide to Silver Creek. The remainder of the homeward journey was accomplished without difficulty or special incident, except a most unpleasant encounter with the proprietors of Wawona, and on July 28th we reached San Francisco.

In closing it may be well, for the benefit of those who may in the future care to visit the same region, to mention a few facts which our trip has made clear:—

1. From the confluence of Mono Creek and the South Fork of the San Joaquin it is possible to ascend the former stream the entire distance to its source, by following the right (north) bank.
2. It is possible to take animals from Mono Creek Cañon to Fish Creek Cañon by following Cold Cañon to its head and crossing the rather difficult pass to which it leads. So far as we could discover, there is no possible route farther east.
3. Red-and-White Peak lies on the main crest and not on a lateral spur. The ascent of the peak can be made certainly in two ways, and probably in three, as already



described. The route of our ascent is probably practicable at any time during the summer months; the other two only late in the season, when most of the snow is gone from the southern slopes.

4. No fish and but little game can be found in the region. From the time we left Big Creek (about twenty-five miles east of Shaver) till we reached the lower course of Fish Creek we found the streams troutless. A few bear and deer may be found, but they are few and far between, and unless one is prepared to spend a good deal of time in looking for them it is hardly worth while to carry a rifle.

5. In traveling in such a region it is not safe to rely, except in the most general way, upon the maps at present available. Mr. Le Conte has done a most valuable piece of work in publishing his maps of the Southern Sierra. He has done more than any other one member of the Sierra Club to blaze the way into these southern mountains; but he himself has never claimed accuracy of detail for his maps, and it is a mistake to expect to find it in them. They are of the nature of pioneer work, gotten up under peculiarly difficult circumstances, and for remoter sections are necessarily inaccurate. The visitor must rely far more upon his own judgment and observation than upon the lines of his chart.

There still remains a portion of the basin of Fish Creek unexplored,—that section between Red Slate Peak on the south and Mammoth Pass on the north. It is to be hoped that other members of the Club may be induced to turn their attention in that direction. If there are any such, the appended map and table of distances may be of assistance to them. The map cannot claim perfect accuracy as to directions and distances. The former were taken by careful observations with a good compass, but magnetic variation is so uncertain a quantity in the moun-

tains that the results cannot be relied on absolutely. The distances on the map are all estimated on the basis of time consumed in walking from point to point, checked by what is known of the actual position of prominent peaks, and are therefore only approximate. In the table of distances the actual time of travel between point and point is given. They represent an average rate of travel for a man on foot driving a burro.

DISTANCES.

	HOURS.
Shaver to Big Creek.....	7¾
Big Creek to South Fork of San Joaquin....	8
South Fork to Camp on Mono Creek, above Third Recess	12¾
Lower end of Vermilion Valley to Pass at head of Cold Cañon.....	8
Pass to First Camp on Fish Creek.....	4
Camp to Foot of trail leading to Silver Creek	8½
Foot of trail to Miller's Bridge, via Cassidy Lake	12
Miller's Bridge to Wawona.....	22¾

MT. WHITNEY, WHITNEY CREEK, AND THE POISON MEADOW TRAIL.

BY WILLIS LINN JEPSON.

One of the old-time trails crossing the southern Sierra Nevada goes under the plebeian name of the Hockett Trail. It connected the towns Visalia and Independence. A line stretched taut between these two places would span the highest peaks and ridges in the whole chain, yet the trail itself is an easy trail and attains no great altitude, for it circumvents the impassable ridges at just that point where the High Sierra Nevada begins to break down abruptly to the south. As a piece of successful evasion, the Hockett Trail has my unreserved admiration; for the man who built it (doubtless it was one Hockett himself) had a practical and thoroughgoing idea of the topography of the southern Sierra.

In olden days supplies for the mines went over the mountains by this route, and as ore was sent out, the mule-trains were heavily loaded on the return trip as well. In later days this same trail has been, for the greater part of the distance, a convenient and serviceable trail to Mt. Whitney (indeed, the only practicable route for animals) from either the desert or the San Joaquin Valley side of the mountains. Furthermore, the easiest way to Mt. Whitney is still the longest way,—that is, to follow the Hockett Trail as far as the higher meadows on Volcano (Old Whitney) Creek. As is well known, there is no abbreviated route to Mt. Whitney with animals.

One must go a long way around to compass a short distance. It was with the thought of finding a "Northwest Passage" to or from Mt. Whitney that two of us left Three Rivers on August 1, 1900. I had just come in from the desert about Owen's Lake, having crossed the Sierra twice in that season, and my companion was Mr. Ralph Hopping, a naturalist and mountaineer, resident in the region, whom I chanced to find at leisure the day before. Each of us had a seasoned riding-mule and pack-mule, with a full complement of supplies.

Our route into Mt. Whitney may be briefly described. It passed over Farewell Gap, followed the Hockett Trail to the Kern, and kept to the bed of the Kern Cañon as far as Junction Meadow. About two and one half miles above Junction Meadow the east cañon wall becomes less abrupt, and it is here quite feasible to gain the top of the eastern plateau and find a way of doubling back towards Whitney.

This whole plateau from the edge of the Kern Cañon cliffs eastward is covered by a forest of foxtail pine (*Pinus Balfouriana*), very considerable portions of it being what is termed a pure forest,—that is, without admixture of other species. This pine ranges northward as far as the Mt. Shasta region, but right here about Mt. Whitney is the most extensive forest of this species,—that is, at the southern limit of its range. On Mt. Whitney it divides honors at the timber-line with the tamarack-pine. The tamarack-pine is very characteristic of swampy meadows at 6,000 to 7,500 feet altitude, and, indeed, the books speak of it as peculiar to such situations. Nevertheless it is not bound to one habitat, for the tree is a feature of the granite slopes hereabouts, and one finds good-sized trees as well as the dwarfs at the timber-line. The two forms, the alpine and that of the meadows, differ in general appearance, and one cannot but contrast them, the

rt dis-
hwen
s let
ne in
t the
Mr.
it in
day
and

ed
all
ar
s
s
:



TAMARACK-PINES NEAR MT. WHITNEY.

From a photograph by Willis Linn Jepson.

former having a much stockier trunk and a less symmetrical crown. (See Plate LXXIV.)

Not many hundred yards south of the east fork of the Kern one meets a rock floe stretching east and west. It is not very wide, but is troublesome to cross. There were any number of inviting openings which permitted one to become involved in it, but we discovered but one way through. Needless to say, this was enough for us, the clew being given by a thin line of foxtail pines which pioneered into the floe from either side. Then we took up our way again, and without further incident arrived at the meadows below Camp Langley, went into camp, and the next day, being the seventh day from Three Rivers, we climbed to the summit of Whitney—a tedious, though by no means difficult, undertaking.

The summit has been frequently described. As for me, my eyes were lured eastward—desertward—to the reds, browns, buffs, grays, and slates, lying like colored cloud-shadows on the nearer ranges, and beyond them the far-stretching, brooding desert, all hazy and mysterious in the hot sunshine. Fortunately enough, we were here joined by a man who knew all that country, and who pointed out an arm of Death Valley, the Panamint Range, dominated by Telescope Peak, the Grapevine Range, and other interesting landmarks. It was pleasant on the summit; the sun warmed the place, there was no wind, and this man from the desert, whose thought was colored by the sagebrush, gave us high entertainment of experience in the sun-baked wilderness without knowing that he did it, his long forefinger, perched as we were at fifteen thousand feet, localizing his stories.

It was our purpose on the return journey to proceed directly from Mt. Whitney to the Kern through the gorge of Whitney Creek, or, as it is designated on all of the

older maps, Crabtree Creek.* It is not very far from Whitney to the Kern straight down Whitney Creek as you measure it on the map. If we could in some way insinuate the mules and ourselves into and through the Whitney gorge, then we should have discovered a short route from Mt. Whitney. In anticipation, I may say here that we found the route quite short enough.

On the morning of August 8th, having saddled and packed with especial care, we plunged boldly down into the cañon. For about two miles we had good going, following the right-hand slope, or wall. Then we were tangled up in the inevitable brush that kept company with a very varied assortment of granite blocks. Furthermore, the cañon narrowed down, and it was partially closed by a transverse wall through which the stream had eaten out a narrow cleft, tumbling over in a series of small falls. The mules sensed trouble. Guided by instincts which did them credit, they made desperate efforts to take the back-trail up hill, and it was only after much persuasion, hard work, and trail-building that we at last found ourselves across stream on the opposite hillside. Thence we worked along the high hillside, evaded the impassable cleft, and so down to the stream once more, crossing it again with some difficulty.

Here we paused to contemplate the view. On two sides were the walls of Whitney Creek,—to the east the transverse wall, to the west the cliffs of Kern Cañon, over which Whitney Creek made its tumultuous way.

* Whitney Creek does not head at the mountain that is nowadays called Mt. Whitney. In other words, the nomenclature of the mountains Whitney and Old Whitney, or Sheep Mountain, has been corrected and defined, but the names of the streams remain as of old. There is a strong sentiment in favor of changing the name Whitney Creek to Volcano Creek—an apt appellation—and transferring the former name to Crabtree Creek. Lieutenant Clarke, in his report to the Department of the Interior as Acting Superintendent of the Sequoia National Park, so designates the streams on his map. For practical reasons I follow him, since many parties are led by Old Whitney Creek to Sheep Mountain, and do not discover their mistake until gaining the summit.

With a strong aversion to conceding the possibility of painfully retracing our steps, we made a noon camp. Out of high esteem for my little brown mule the camp was named "Hot Haste Camp." We nailed the legend to a red fir-tree as a sign. That sign will outlive the mule. "Hot Haste" was the most philosophic mule that it has ever been my privilege to know. It is true that in most particulars he was not to be trusted, but he differed from other mules in that he did not subscribe to the doctrine of useless resistance. He did not kick for the sake of kicking, nor swell for the sake of swelling. Headed off on the back trail, "Hot Haste" yielded at once; his strong philosophic bent immediately dominated his actions and demeanor.

It needed but little exploration to show the hopelessness of tracking directly down either side of the stream, and without doubt our mode of egress is the only one. Work your way up to the foot of the cliffs of the northern wall, follow our built trail over the talus (if there be any of the blocks still in place) out to a small timbered shoulder projecting somewhat into the cañon. Having gained this, it is a matter of time to zigzag down the less-inclined slopes of the Kern Cañon to the bed of the Kern River. It was thus that we came through. I am told that others have since tried it and failed, but with mules (not horses) and an outfit contrived and strengthened by the experience of many seasons it ought not to be considered a venturesome trip.

The day's excitement was such that we were glad to make an early camp. After about three miles of travel we forded the Kern to the west shore and disported our camp equipment on the surface of a little meadow, beautifully green, diversified with many sorts of flowering herbs and with as many as three kinds of gentians—so

that the name Gentian Meadow* seemed appropriate. One edge of the green open held three little pools, so crystal clear, so filled with iridescent tints, that I was at once carried back to glacial valleys opening to the shores of Bering Sea, where like pools are found on the mossy tundra. But the smell of cooking rose on the still air and one's thoughts thus hurry back precipitately to the present.

The next morning we were up betimes and headed down the Kern. Between Junction Meadow and Funston's Meadows are many young tamarack-pine trees, fifteen to forty feet in height. The trunks at four or five feet from the ground—and mainly on one side—bore conspicuous scars caused by the removal of the thin bark. These scars were of oblong outline, or triangular, or wedge-shaped, with the point of the triangle, or wedge, pointing upwards. They were quite cleanly made, and yet palpably no human tool had done the work. Old-time mountaineers say that porcupines feed on the inner bark when the snow is on the ground, and, in any event, it is scarcely dubious but that some gnawing animal has cut out these false "blazes."

Just to the left of Funston Creek in the Kern bed a trail may be found which climbs the west wall of the cañon. It is a good trail and leads directly to Funston's Mountain Meadow, a large round meadow on a broad, level plateau which permits a fine inspection of the near-at-hand red-hued Kaweahs and the ragged peaks of the Sawtooth Range. Just to the south of Funston Meadow is a forest of tamarack-pines, a finer forest than any of that species that I know elsewhere. It is an almost pure forest of considerable extent, and many of the trees have trunks five or six feet in diameter. The juniper-trees on

* Whenever we named a locality we thought it worth while to tie the name to the spot lest it get lost. Here, as elsewhere, we contrived a sign and nailed it to a tree trunk so that others following might plainly read.

this plateau were also exceptional as to the size of the individual trees and their intact tops.

East and west across the Funston Meadow plateau is the huge gash of the Big Arroyo. Such names as Dry Creek, Big Creek, and Stony Creek weary by their endless repetition along the paths of the earlier West American trailers, and evidence the imagination's poverty, but I am fain to admit that the Big Arroyo is worthy of his name. We were nearly an hour getting to the bottom of him, and there camped for the night.

From this point to Farewell Gap the trail is often indefinite or none at all; so it may not be amiss to particularize. We followed up-stream the bed of the Big Arroyo for two miles, turned abruptly up the hill, and entered the so-called Soda Cañon. Along Soda Creek are a series of meadows, enticing to both beast and man. These are the "Poison Meadows," but they do not look so attractive when one observes the whitening skeletons of riding and pack animals that have died in this paradise up under the sky. Although all of the plants here were carefully collected, I regret to say that the source of the poison has not yet been located. The poisonous plants which grow here also grow in other meadows which are regarded as perfectly safe. It is said—and with obvious good reason—that staked animals are more likely to die than animals which are allowed to range freely. The poison works quickly, as poisoned animals usually die the same day. As to accusations against the water, I not only tasted but drank freely at all of the streams in passing through this country. The subject needs much more detailed study than I was enabled to give it. We had no loss, because we prevented the mules from eating, although, of course, they—being hungry—protested nearly every step of the way.

In this manner we journeyed up the cañon through

woods of tamarack-pine, red fir, Jeffrey pine, succeeded by a very sharply defined zone of mountain pine, and this in turn by a zone of foxtail pine. After about three miles we turned south abruptly up a difficult hill to a little mountain lake, one of the exquisite sort so frequently met with, which rested in a hollow of the country rock just below an unnamed granite peak, which, merely on account of its symmetry and position, had for some time been holding our attention. Here we made a mid-day camp, naming the bit of water "Little Claire Lake," tacking the sign to a tamarack-pine tree on the northern shore. Then we set off again, pausing on the southern side to get our fill of a foxtail-pine forest, of which I had never seen the like before. Here, indeed, between the granite and the sky, was the solidarity of the foxtails. I set much store by the memory of this spot. The place was all cleanly strewn with coarse granite sand and thickly peopled with the foxtail pines. Their red-brown trunks were rich in color and called the eye back to them again and again—and still again. The short needles of the thickly foliated trees were in fives, densely set at the ends of the branchlets and so formed the "fox's tail." Usually the axis of the tree projects through the crown as a splinter point whitened by sun and rain. (See Plate LXXV.)

Both men and mules reluctantly—albeit for different reasons—surmounted a rough escarpment, perhaps one hundred and fifty feet high, that bars an easy way into the Estcourt Basin. There was no sign that we had been preceded; all was clean, inviolate. Another beautiful stretch of water recalled Stevenson's pool, for it seemed as if it too might be "forever quiet, clear, and cool." It now seems well that we did not even leave a name for the lake, so unmarred, so remote from human steps seemed this basin.



FOXTAIL PINES NEAR LITTLE CLAIRE LAKE.

From a photograph by Willis Linn Jepson.

The course, now, is southwesterly up a long series of rocky slopes to the lowest notch in the divide towards the Little Kern. This notch—it is n't much of a notch—is called by the sheep-herders Quinn's Pass. From the little meadow below the pass one must hug the mountains to the right and with great persistence until the old trail is found leading directly to Farewell Gap. Thence to Visalia the way is long but a traveled one.

A NEW-YEAR OUTING IN THE SIERRA.

BY J. E. CHURCH, JR.

A trip with sled and snow-shoes in mild and semi-snowless weather seems an anomaly. Yet such unusual conditions prevailed when Mrs. Church and myself made our first prolonged winter outing in the Sierra. The idea of making such a trip as this had occurred to us two years previously, when we were in the Bavarian Alps. We decided to visit that portion of the Sierra lying north and east of Lake Tahoe and culminating in Mt. Rose, for the reason that it was adjacent to Reno, where our home was. Moreover, having an altitude varying from 8,000 to 10,800 feet, it commanded not only an extensive view, but would also furnish an abundance of useful information in case we should be tempted to make more extensive mountain trips in the future.

Our outfit was almost wholly experimental. We were dressed alike, for no woman should think of going into the high mountains in winter, clad in the trailing, clinging garments of her sex. We wore canvas suits and sweaters, heavy caps and knit hoods, heavy leather-faced woollen mittens, and felt boots with rubbers. In addition to our canvas bed, we were supplied with heavy fleece-lined garments, in case the cold should necessitate extra covering at night. Besides this, a broad strip of canvas was added to our equipment, as a roof for a possible snow-house.

For cooking we depended upon a single-burner oil-stove and a rectangular five-gallon kerosene can. A camp-fire we considered too dirty. Our outfit was made

complete by the addition of an ax, a compass, a camera and tripod, a life-line and ice-ax, blue glasses, a small medicine-case, a hunting-knife and revolver, Bavarian snow-shoes of the Algäue form (see BULLETIN, vol. IV, p. 66), a roomy German knapsack, and a sled made specially to carry our outfit under any condition of snow we expected to encounter.

Our plan was to have our outfit transported to a cabin belonging to some prospectors near the snow-line, proceed thence by easy stages to Big Meadows at the top of the range, and, continuing past Mt. Rose to Lake Tahoe, return along the Truckee River to the railroad at Truckee.

We planned to be absent eight days, and arranged to light signal-fires, as opportunity offered, to allay the misgivings of those at home. The story of our experiences may best be told by a series of extracts from our diary of the trip:—

Camp Prospect, December 30, 1901.—We have made a successful beginning of a mid-winter outing in the mountains, which has caused much perplexity and foreboding in our family circle. The bitter mountain cold, the mountain lions, known to haunt the range north of the Truckee, the bears, the violent snow-storms,—will they materialize? We shall have none of them to fear in our lofty eyrie to-night, where we found our friends, the lonely prospectors, ready to welcome us to the best their cabin afforded. The winds may howl, but we are comfortable. May the dear ones at home accept the beautiful day and the successful attainment of the snow-line as an omen of a successful trip.

December 31.—The sunrise is beautiful this morning. The wind has died away. We are inclined to bask in the warm sunshine and enjoy the panorama. Our friends are planning to help us transport our outfit to the region

of continuous snow. This is amusing,—a sledging trip to the High Sierra with scant snow to sledge on. Patches of snow are near the cabin, but they are too widely separated to be serviceable.

Camp Comfort, Evening.—After dinner we set out, carrying the sled, on which had been packed the entire equipment except the bedding. We followed the old road above Hunter's Creek Cañon. The drifted snow afforded now and then an opportunity to draw the sled, but the rocks and sagebrush made it labor and roll like a ship on a reef. It was stanch, however, and its timbers never creaked, although the load was so heavy that our friends ventured the opinion that we would not haul it far alone. As we neared the head of Hunter's Creek the snow-field became continuous, although, in general, only one foot deep. The sled was finally left on a flat within sight of an old cabin which would serve as a stopping-place for the night. We then returned for the bedding, while Florence lingered to light a beacon-fire.

The bedding was heavy,—too heavy, in fact,—and I became more than ever convinced of the necessity of having a sleeping-bag lined with lambskin or eider-down.

We soon returned to the sled, and with a flourish our team of three drew up at the door of the cabin. Charley had gallantly invited Florence to ride to her new home. How unlike the "Old Country" German he is! With a hearty handshake and a wish for a Happy New Year, our friends left us to begin our trip over the range alone. The cabin was uninviting. The ante-room had fallen in. There was a large opening in the roof, and snow lay on the upper bunk. But Florence soon arranged the debris inside, while I patched the roof and boarded the tiny windows to keep the animals out, in case they should visit us. Our kerosene-can, with the top cut out and a smoke-vent in one side of the bottom, is sending long tongues

of flame up the rusty pipe. Old tables and benches neatly arranged throughout the room make the place quite cozy.

The evening outside, however, is far more attractive. The young pines and tamaracks around the cabin are lighted up by the glow of the pine stumps burning before the door, while the snow itself is as rosy as any Alpine glow could be.

New Year's.—The sunrise this morning filled the crevices of our cabin with golden light and illumined the ranges to the eastward, until we seemed to be looking over billows which had remained stationary after reaching their crest. The sound of the locomotive-whistle comes faintly up from the depths below. Otherwise, all is still except the wind, which whistles about the cabin and through the trees.

Big Meadows Camp, Evening, January 2.—We have been in this breezy but comfortable camp since last evening, and have begun to wonder from our surroundings whether we are Esquimaux or white people recently accustomed to the so-called requirements of civilization. We are certainly like the former, in that we have a fire to look at only and to cook over, and are living in the midst of snow-banks, but unlike them, in that our "igloo" is not a tight house of snow, but a log cabin void of ridge-board and chinking, and open enough in places to admit a man. Our carpet is white and of snow; snow-drifts adorn some of the benches and tables. Our chamber window is as long as the logs themselves, and permits the bright stars to peep in upon us.

Yesterday afternoon we bade farewell to Camp Comfort, and, with our entire outfit snugly loaded on the sled set out for Big Meadows, where we intended to establish our next and more permanent camp. To obtain a gradual grade, we were compelled to follow the windings of the mountain-sides, whose cross-slope often

amounted to eighteen degrees. Yet only at this gradient did the sled manifest any decided tendency to roll over. Furthermore, it rode lightly on the snow, the lower or downhill runner, upon which was thrust the greater part of the burden, never sinking deeper than four inches, even when we ourselves broke through to the depth of a foot or more; while on a level surface the tracks made by the runners were rarely more than one inch deep. The sled, however, has one tendency which often ceases to be a virtue,—viz., to continue moving in a straight course, from which it cannot easily be diverted to avoid an obstruction. A pair of "bobs," such as those suggested by Professor Brown (see BULLETIN, vol. III, p. 246), would be more tractable, but would not ride over brush and hummocks as readily. This difficulty may be largely overcome by crowning the runners and attaching a rope to the rear of the sled, so that the person pushing can aid either in holding the sled in check or in changing its course.

We were agreeably surprised upon reaching the pass to find our united strength sufficient, being now aided by a firm crust, to haul our sled with its entire load up the slope of fifteen to eighteen degrees, by a series of zigzags, to the summit, from which it speedily followed us down the frozen slope into Big Meadows beyond.

I was anxious to camp in the snow, which, being deeply drifted here, furnished an excellent opportunity for making a snow-house; but, in view of Florence's preference for cabins, I set out in search of the only one in the neighborhood, and soon found it at the edge of the great tamarack forest which thickly clothes the mountain-sides and encircles the meadow. It made a sorry shelter, but was inviting in the evening gloom which was fast settling over us. The bunk was fortunately dry, and was easily protected from a strong wind by our tarpaulin,

which we hung from the roof. The sky was still clear, and through an opening in the dark-green foliage Orion looked more lustrous than ever. We went early to bed, but not to sleep. The bedding was too warm, and a wild gale that now roared over our heads in the forest kept us awake. I finally fell asleep, soon to awake and listen to the wild voices borne on the wind. The continuous moaning as the forest swayed in the blast was accompanied at regular intervals by a violent dash and a sudden shock, as when a huge billow strikes the side of a vessel. Sometimes in my active imagination, I heard the wild cries of living beings, but these resolved themselves into the moaning of the tempest. Once I was awakened by fine snow falling upon my face and was impelled to rise and turn our boots upside down to keep them dry, but fell asleep before attempting the chilly act. Day dawned at length, but the sun remained hidden behind masses of scurrying clouds.

The scenery was fascinating. The broad, level meadow and forest-clad encircling mountains formed an ever-changing panorama as the snow-clouds lowered here or lifted there, letting a ray of sunshine illumine the scene. Sometimes the domes of rock, which rose above the forest, faded like dim gray specters, then suddenly appeared in all their strength and massiveness as the veil of falling snow was swept aside. The brown and green of the forests faded away to the snow-white hue of the mountains upon which they stood. The clouds, too, often assumed fantastic forms. Sometimes they were rifted, exposing a patch of sky of intense blue, like that so often painted by Arnold Böcklin, or a bit of pale sea-green. Then again, the dark and distant clouds advanced slowly in unbroken array over the sky, while the lighter, tattered ones hung close to the ground and hastened by like fugitives before the advancing host.

We wandered forth through the forest, enjoying the storm, wearing our snow-shoes for the first time, in order to test them in soft snow. We found them extremely satisfying after our previous floundering without them. We walked forward, sidewise, and backward without the slightest difficulty, although both of us were novices at the business. These shoes rarely sank more than four inches into the snow, and usually much less. They are therefore much handier than the Canadian shoes, and, although more inclined to gather snow than the latter, the weight of all that such small shoes could possibly collect is trifling. We found footprints of forest creatures at every turn, and wondered what they would think when they saw our elephant-like tracks, and whether they could tell who we were any better than we could tell who they were. They might know that we were striding animals, as we that they were mostly leaping creatures, but they would not know from our footprints that we were "humans."

We also named some parts of this nook in which we were revelling. The Meadows, which looked much like a Colorado park, we named Big Meadows Park, the pass through which we came yesterday Big Meadows Pass, and the ridge to the south of it Martin's Ridge, in honor of Miss Anna Martin, a Sierra Club member, who recently made its ascent. The dome to the south of the cabin we finally decided to call Meadow Dome.

As we were returning to the cabin we saw in the distance two figures trudging along the white expanse of the meadow, and hastened after to find our friends, the prospectors, just returning from Floriston, whither they had gone yesterday. They again rendered us material assistance by locating the spring which lay hidden under the snow. We are now no longer thirsty. They also showed us the way to Floriston. Trail west of south along edge of the meadow, and then southwest one and

one-half miles to ravine leading to snow-line at Duffy's wood-camp. At this point is a flume down which we can slide to Floriston. This route home is attractive, and will probably be selected if the pass to Lake Tahoe should prove to be too steep for sledging. After their departure we retraced their steps to the ravine and blazed the trail with the letter V.

At the head of the ravine we hoped to obtain at least a glimpse of the valley of the Truckee, but were scarcely prepared for the treat in store. The storm seemed suddenly to break away, revealing a mass of dark green, which sank into the depths where the Truckee lay too secluded to be seen, and rose far up to the summit of the high range beyond. Around and amid the green lay a mantle of pure white, less prominent, however, than the former, which hid it from view. Up the valley and to the south towered the main range of the Sierra. No towns appeared, but Nature was present in all her pristine loveliness. The mantle of green had not yet been ruthlessly stripped from the shoulders of these mountains, as it had been from the range over which we had come from Reno.

We had lost a pair of field-glasses on the way and carefully retraced our steps. But our anxiety for the glasses could not prevent our gazing heavenward to catch glimpses of the sunset. The eastern sky was purple at the horizon, fading away to the tints of rose above. In the north the air was luminously white; while in the west the sky assumed a yellow hue, which changed to orange as the sun sank lower, and at last became a brilliant red. A few lingering clouds were luminous with rich color.

We had yet one duty to perform—that of sending a message of safety and comfort home. We hastily ascended the slope through a mahogany thicket to the

mass of rock we had named Martin's Ridge and soon set fire to a dead tamarack just over the summit. The electric lights at Reno were faintly twinkling down the cañon, and we imagined eyes directed mountainward in anxious search for our beacon. It had now grown dark. We therefore hastened down to the pass and through the timber towards our cabin. How strange it seemed to be roaming at pleasure through the mountains instead of hastening valleyward to avoid the night,—to be turning away from home and its refinements to the mountain fastnesses above! We walked along with scarce a dread of danger, though we were always on the alert. Florence seems to have lost most of her former apprehension, and I, too, now feel secure. The last traces of the departing sun were still visible in the faint afterglow, as we reached our forest retreat.

While I write, the wind has died entirely away. The forest is still. The temperature is rapidly falling. At 8:30 P. M. it was 28° F., now, at 10 P. M., 23° F. We shall sleep soundly to-night, with only the distant whistle to remind us of life.

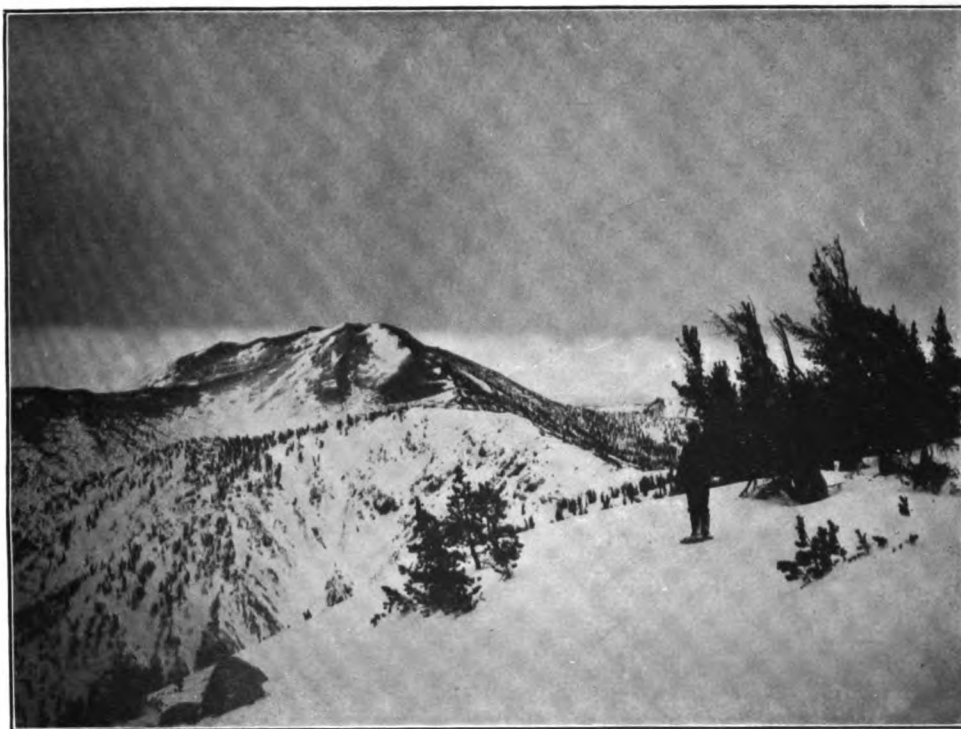
January 3.—This day has been almost perfectly calm, and the sun so dazzling that my eyes have ached intensely, although I have shielded them somewhat by squinting. Colored spectacles are unsatisfactory, because they distort the natural colors of the landscape. Next trip I shall try a pair of wooden goggles, like those described by Nansen, having a slitted orifice. We both have suffered from dizziness accompanied by lassitude and sickness, due largely to the sun's glare upon the snow. My lungs also have ached somewhat on account of unusual distention,—“growing pains,” we might call them. The snow-crust of the early morning finally gave way to dry crystalline snow.

This afternoon we followed the range south to inves-



THE WINTER SIERRA AFTER A STORM.

From a photograph by George J. Young.



MT. ROSE FROM THE NORTH.

(ALTITUDE 10,800 FEET.)

From a photograph by J. E. Church, Jr.

tigate the route to Mt. Rose and Lake Tahoe. From the summit a wide panorama of mountains and valleys lay around us. On the northwestern horizon could be seen Lassen Buttes, and to the south a mountain of oval outline, known as Rose Peak. Mt. Rose itself was hidden behind a dull-brown eminence, which we christened Mt. Eisenbrey. It was now evident that to draw our heavily laden sled to the high pass between Rose Peak and Mt. Pluto, where the descent to Lake Tahoe begins, would cost at least two days of tedious exertion. We have decided, therefore, to make a flying trip to Mt. Rose to-morrow, and return to Reno on Monday by way of Floriston.

Projecting from the ridge upon which we were standing was a spur which afforded a charming view of the basin of the Truckee and the summit of the Sierra beyond. It stood, as if intended for some eagle's nesting-place, far above the valley, and reminded us so strongly of Lookout Mountain in Tennessee that we finally decided to name it Lookout Ridge.

While passing down the steep slope of this ridge our snow-shoes met our highest expectations. Their small rims cut sharply through the crust, or, if this at any time was too thick to be broken, the rope mesh was pressed so deeply into the snow that the shoes rarely slipped. We also noticed that with these shoes we stepped at least one third farther than without them.

The sunset was simpler this evening than last. Yet it colored the snow a rosy hue and the green foliage a reddish brown, the effect of the whole being heightened by dainty pearls of moisture hanging from the needles of the trees.

January 4, 8 a. m.—We shall leave in an hour for Mt. Rose, and expect to return this evening. If storms beset us, we shall descend to West's ranch on Galena Creek.

January 5.—How deceptive distances are! We departed for Mt. Rose yesterday at 9:20 A. M. and reached home at midnight, after a wearisome tramp of nearly fifteen hours. We gained the summit of the mountain just before sunset, in time to deposit a new Club register in place of the old one, and retraversed the most treacherous slope of the mountain before darkness closed in upon us. Lake Tahoe lay like a great mirror, except where ruffled in one or two places by a gentle breath of wind. Fallen Leaf Lake, near Tallac, was plainly visible. The long shadows began to steal swiftly from the range on which we stood over the broad valley to the east, while the western sky became a luminous mass of crimson and gold, blended into one gorgeous color that filled the heavens from north to south and from the horizon half-way to the zenith,—an Alpine glow, exceeding in wondrous beauty any sunset effect I had seen in the Alps.

We rested often in the mild evening air and watched the valleys grow dim and the lights appear, longing for a sleeping-bag, that we might lie where we were in comfort until morning. We moved slowly along in the light of the evening star, until at last it, too, sank below the horizon. But the myriads of fainter stars still furnished sufficient light to distinguish the larger features of the landscape, so that, with the aid of the life-line, we were enabled to retrace our steps in safety. The sharp crests of snow which lay directly across our path, on account of the prevailing wind from the west, were, however, indistinguishable in the gloom and caused us many a headlong fall.

Wood Camp, January 6.—Our sled has demonstrated its strength and practicability to-day on a rough trip, for it has been hauled through sagebrush and thicket, over rocks and creeks, without a mishap, except an occasional overturn. The sled is large and stout enough to carry

an outfit for five men, instead of for two. We shall use a smaller one next time and shoe it with steel concave runners, to reduce friction, especially if we take sleeping-bags instead of a canvas bed. Furthermore, we should have two pairs of felt boots apiece, in order to have a dry pair always at hand.

To-morrow Mike Marr, a friendly wood-chopper, will help us draw the sled down the flume to Floriston. Then we shall soon reach home. How strong and rugged we have grown during the past week away from the nervous strain of the busy world!

THE ASCENT OF VOLCANO MAYON.*

BY ANDREW VENABLE.

Towering 8,900 feet above the level of the sea, Mayon is the loftiest active volcano in the Philippines, and among those of greatest altitude in the world. To the timber-line, it is covered with dense tropical vegetation, and thence to the summit is a tortuous distance of almost impassable gorges, here of broken rock and there of volcanic sand and pumice,—gorges, some hundreds, and others thousands, of feet deep, above which hang crumbling masses of rock and sand,—death-traps, from whose depths constantly rise pale columns of dust, the residue of avalanches hurled into the depths below.

The ascent of the nearly perpendicular sides to the summit was for centuries considered an impossible feat; but this was accomplished in March of the present year (1902) by two Americans. Only two of a party of five were successful, the others, overcome by fatigue, stopped by the wayside.

The next previous attempt was made by a German scientist, who, visiting Legaspi, a city at the base of the mountain, declared his intention of making the ascent. The Spanish commandant sent a sergeant and two soldiers with him. Through field-glasses they were seen, in the fading light of the evening, far above the timber-line. They never returned, and it is supposed they were overwhelmed by an avalanche.

The successful party consisted of Captain Thayer,

* Reprinted from the *Manila Cablenews*, October 5, 1902.

Third U. S. Cavalry; First-Lieutenant Charles Stodter, Second-Lieutenants Robert M. Barton and W. N. Haskell, all of the Ninth U. S. Cavalry; Mr. Hudson H. Bubar, then of the U. S. Engineers, but now a forestry inspector; and a Spanish physician. Of these only Lieutenant Barton and Mr. Bubar succeeded in reaching the summit.

Mayon volcano possesses a grim history. It is situated in the province of Albay, island of Luzon, and from a distance presents a beautiful symmetrical form. In appearance a perfect cone, the eye follows the accurate lines with pleasure to the point where the summit is lost in the clouds or mantled in the vapor that ever rises from the crater. Despite the ruin it has wrought, around its base are several towns and villages, the largest of which is Albay, the capital of the province; among others are Camaling, Malinao, Tabaco, and Cagsaua.

The volcano is constantly active and frequently in violent eruption. In 1769 two towns and several villages were demolished, while ashes and lava were thrown out during a period of two months and destroyed property within a radius of twenty miles. On February 1, 1814, without warning it burst forth with great violence, and there was frightful destruction of life and property, more than 2,200 people being killed and many wounded. A slight eruption took place in 1887; this was followed by one much more severe on July 9, 1888, by which several villages were destroyed. In May, 1897, there was a frightful outburst; showers of red-hot lava fell over a radius of twenty miles, and in the immediate vicinity over four hundred persons were killed. Total darkness prevailed at Tabaco, and the earth opened. Houses were buried at Bacacay, and the villages of San Roque, Misericordia, and Santo Nino were completely covered by débris and their populations destroyed. At Lubi more

than one hundred people perished in the ruins. Insurrection was in progress at the time, and the devastated section in the insurgent lines, hence there are no figures to give of the exact damage; but it is known to have been the greatest calamity to befall the province. The last eruption took place in 1900; for three days the sun was obscured by dense volumes of smoke, and during that time gray ashes were falling. When the light returned it was discovered that the south side of the crater, that had previously been pyramidal in form, had been thrown down. Sixty-seven natives lost their lives.

It was the mystery that surrounded the cause of such disasters as those cited above and the seeming impossibility of the undertaking that prompted the ascent, an account of which was secured from Mr. Bubar, one of those successful in reaching the summit.

The party named above, amply supplied with ropes and other appurtenances to mountain-climbing, left Guinobaton, a village several miles distant from the mountain, at 4 o'clock in the afternoon of March 15, 1902. Means of carrying water had been particularly provided, for it was known that none was to be obtained above the timber-line. Mr. Bubar had failed in a previous attempt because of exhaustion of his supply of water—this when he was within 1,000 feet of the summit.

Riding until an hour after nightfall, a point fifteen hundred feet up the mountain-side was reached. Here the night was passed, and in the morning the horses and other *impedimenta* were left. The actual ascent was commenced at 5:30 A. M. on the morning of March 16th. For some time a narrow trail, cut through dense tropical vegetation, was followed. In all directions extended a forest of large trees and palms, from which hung, festooned, bauhaua and other vines. In the ravines grew giant ferns of numerous varieties, and the brilliant hues

of many-colored rhododendrons cast a gorgeous tint over the landscape.

The way continued thus for some time; then the trail gradually ceased, and it became necessary to cut a passage through the dense jungle of tangled vines. They were now far above the habitations and haunts of man.

At 9 o'clock the noticeable decrease in the vegetation evidenced the approach of the timber-line; the palms, ferns, and rhododendrons had disappeared, and in their stead there were only the hardiest of trees and shrubs. Soon even these were passed, and half an hour later they stood on the verge of a deep gorge, beyond which there was no vegetation. Here there was a small "water-hole,"—a mere depression in the rock,—the capacity of which was three barrels at most; the water, however, was pure and cool. After filling the extra canteens, the Americans crossed the gorge and commenced the wearying climb—the Spanish doctor, concluding that the altitude would have an ill effect on his lungs, had left the party at the "water-hole."

The way was now extremely difficult, a succession of rocky barrens and spaces of yielding sand intermingled with broken rock. Deep gorges were frequent, and, because of the shifting footholds, extremely dangerous; in many places a misstep would have resulted in a fall of hundreds of feet into the depths below.

An altitude of 6,500 feet had been attained at 11 o'clock. Here it was as though mountains of rock had been broken into chaotic masses and lodged by some titanic force. Much time was consumed in passing from crag to crag and traversing the gorges. Ropes were brought into service, and by this means the party, by mutual aid, dragged on. Arriving at a point more difficult than any previously encountered, Lieutenant Haskell

declared he could go no farther, so, seating himself on a rock, he gave up the attempt.

Twenty-four hundred feet yet remained to the summit,—a distance a soldier would march, over ordinary roads, in seven minutes; yet in this now dangerous ascent three toilsome hours were consumed in attaining the first 1,400 feet. Here the angle of the slope was about fifty degrees, and the side of the mountain riven with chasms. There was no life, and chilling winds whistled through the crags and columns of broken stone.

The mountain was now a conglomerate of lava, rocks, and great boulders, among which lay flinty rills of scoria.

At 2 o'clock the party rested—rested their weary bodies on the rocks, and their eyes in viewing the magnificent panorama that lay below them.

Far away to the north, sixty miles distant, stood Isarog, the tall mountain of Camarines Sur, its crest lost in the horizon, while nearer, fifteen miles away, in the same direction, rose Mount Palinqui. Beneath there was a sea of green, bordered by the silvered line of the Gulf of Rigay. Numerous towns and cities dot the expanse, for within that horizon are the habitations of hundreds of thousands of human beings.

The slope of the mountain from this point is about sixty degrees, so steep that Captain Thayer and Lieutenant Stodter did not care to attempt it, so Lieutenant Barton and Mr. Bubar alone accomplished the ascent to the summit. Taking all of the cameras in the party, they started at half-past 2 o'clock to traverse a way on which the foot of man had never before been set. One thousand feet, the most difficult in the ascent, remained. So steep is the mountain-side, that from the plains below it appears to be perpendicular. The first five hundred feet were the most difficult; there was almost no foothold on the

hardened lava, and the danger of falling into chasms was great.

From five hundred feet below and extending to the crater is a stream of hardened scoria; in cooling, this so cracked as to form a rude ladder, the ascent of which, though difficult, was possible. By this the summit was reached. To a distance of two hundred and fifty feet the top of the mountain has been shattered as by an explosion, and there are hundreds of clefts and holes; from these steam is constantly escaping with a whistling sound. About the crevices and holes lay piles of dead insects, such as grasshoppers, locusts, etc., that, driven to the mountain-top by high winds, had drawn near to the warm steam to escape death from freezing.

The highest point of the crater is 8,900 feet above the level of the sea. The edge of the crater is a mass of black volcanic sand and pumice, from which outcrop ledges of white and red rock. The effect of the sunlight on this rock is extremely beautiful; it lights the crest of the mountain as with a crown of gold.

The crater is about two hundred yards in diameter, and descends perpendicularly into the earth. At a depth of about one hundred feet the diameter of the vent decreases to fifty feet. From this there constantly ascends a column of steam, intermingled with a small quantity of smoke. The vent has been choked in some way, and the steam escapes as though under pressure. The south and southeast sides of the crater are much lower than the remainder, having been thrown down by a previous eruption, probably that of 1900.

By half-past 4 o'clock in the afternoon, having exhausted the films in all the cameras, and satisfied themselves with viewing the surrounding country, which could be seen for many miles, Lieutenant Barton and Mr. Bubar commenced the descent. They were joined at the

7,900-foot level by Captain Thayer and Lieutenant Stodter, who had waited for them. At 9 o'clock in the evening the "water-hole" was reached. The officers were so completely exhausted that they could proceed no farther. Mr. Bubar, however, went on to the camp below and sent back horses, blankets, etc. Lieutenant Haskell accompanied the relief party. All reached their stations on the next day, March 17th, none the worse for the experience, having accomplished a feat interesting to the general public and valuable to science.

At this writing, October, 1902, the volume of smoke from Mayon has increased to such an extent that it overhangs the mountain, and there is little doubt that soon it will be in active eruption.

SIERRA CLUB BULLETIN.

PUBLISHED IN JANUARY AND MAY OF EACH YEAR.

Published for Members.

Annual Dues, \$3.00.

The purposes of the Club are:—"To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada Mountains."

OFFICERS FOR THE YEAR 1902-1903.

Board of Directors.

Mr. JOHN MUIR	<i>President</i>
Mr. ELLIOTT McALLISTER	<i>Vice-President</i>
Mr. J. N. LeCONTE	<i>Treasurer</i>
Prof. W. R. DUDLEY	<i>Corresponding Secretary</i>
Mr. WILLIAM E. COLBY	<i>Recording Secretary</i>
Prof. GEORGE DAVIDSON,	Pres. DAVID STARR JORDAN,
Mr. WARREN GREGORY,	Mr. WARREN OLNEY.

Auditing Committee,

Directors GREGORY, McALLISTER, and DUDLEY.

Committee on Publications,

Pres. DAVID STARR JORDAN, *Chairman.*

Mr. J. S. HUTCHINSON, Jr.,	Dr. MARSDEN MANSON,
<i>Assistant Editor,</i>	Dr. EMMET RIXFORD,
Mr. A. G. EELLS,	Mr. E. T. PARSONS,
Mr. J. S. BUNNELL,	Mr. R. H. F. VARIEL,
Prof. J. H. SENDER,	Mr. TRACY R. KELLEY.

Committee on Admissions,

Directors DUDLEY, OLNEY, and McALLISTER.

Committee on Parks and Reservations,

Prof. GEORGE DAVIDSON, *Chairman.*

Prof. W. R. DUDLEY,	Pres. DAVID STARR JORDAN,
Mr. J. M. ELLIOTT,	Mr. ABBOT KINNEY.

Committee on Outing and Transportation,

Mr. WM. E. COLBY, *Chairman.*

Mr. J. N. LeCONTE,	Mr. EDWARD T. PARSONS.
--------------------	------------------------

REPORT OF OUTING COMMITTEE.

THE KING'S RIVER OUTING OF 1902.

It may be of interest to some of the members of the Club who were unable to join the outing party to the King's River Cañon to know that it was an unqualified success. The trip involved fifty miles of staging and thirty-five of packing over a rough mountain trail before the main camp in the King's River Cañon was reached. Over two hundred people made the trip to the main camp, which was established for five weeks. Over one hundred of this number went up Bubb's Creek Cañon to the very crest of the High Sierra at Kearsarge Pass, and fifty of the hardest mountaineers climbed Mt. Brewer, nearly 14,000 feet in elevation. Considering that some 25,000 pounds of personal baggage and camp equipage had to be transported to the main camp on the backs of animals, and that during the entire trip, including many side trips involving rough mountaineering work, no accident happened to any member of the party, the Committee feel that they are justly to be congratulated, and they take this opportunity of expressing their thanks for the able assistance they received from members of the party. Financially the trip was a success, and over one hundred dollars remains in the outing fund to pay for printing and other expenses preliminary to the outing planned for next summer.

PLANS FOR THE SIERRA CLUB OUTING OF 1903.

Profiting by the invaluable experience of previous outings, the Committee are planning an outing for the

summer of 1903 that will be even a more complete success in all its details than those of the past.

At the present writing, provided certain physical obstructions can be removed and the rivers to be crossed made passable, it is the intention of the Committee to have the main camp of the outing at Lake Eleanor. This beautiful mountain lake is situated at an elevation of almost 5,000 feet, and just at the doorway of a most rugged and almost unexplored alpine region lying to the east and toward the main crest of the Sierra.

The numberless streams and smaller lakes in the vicinity abound in trout.

The main camp-site is comparatively easy of access, being but twenty miles by trail from a little logging-train. This train takes the place of the usual stage-ride, and will land the party far up in the sugar-pine belt. From this point to the camp-site the trail leads through one of the finest pine forests in the world and crosses several small and picturesque rivers. Members of the party can easily reach the main camp in two days from the city. From the camp several very attractive trips of a day each can be taken. The rim of that other world-renowned Yosemite, the Hetch Hetchy Valley, is but four or five miles from the proposed camp-site. The falls and cliffs of the Hetch Hetchy are wonderful beyond description and much finer than those of the King's River, and though on the whole they do not equal in grandeur those of Yosemite, yet they possess many features which are as attractive.

An exceptional opportunity will be afforded for taking the famous knapsack trip down the Grand Cañon of the Tuolumne. It is also proposed to take those of the party who desire it across country and into the Yosemite Valley, from which place they will return home over the

customary routes. An expedition to the crest of the High Sierra will be made by the more hardy mountaineers.

A climb of Mt. Shasta immediately following the main outing is also being planned.

Complete details of the trips will be issued in the customary announcements early in the Spring.

WM. E. COLBY, *Chairman,*

J. N. LE CONTE,

E. T. PARSONS,

Outing Committee.

NOTES AND CORRESPONDENCE.

In addition to longer articles suitable for the body of the magazine, the editor would be glad to receive brief memoranda of all noteworthy trips or explorations, together with brief comment and suggestion on any topics of general interest to the Club. Descriptive or narrative articles, or notes concerning the animals, birds, forests, trails, geology, botany, etc., of the mountains, will be acceptable.

The office of the Sierra Club is at Room 16, Third Floor, Mills Building, San Francisco, where all the maps, photographs, and other records of the Club are kept.

There are but a few copies on file of No. 3, Vol. I., of the BULLETIN. The Club would like to purchase additional copies of that number, and we hope any member having extra copies will send them to the Secretary.

A CORRECTION.

In Vol. IV, No. 2, of the BULLETIN there is an error in Plate LXI (opp. p. 95). The upper picture should be entitled "Mt. Brewer from Bullfrog Lake," and the lower one, "View from Kearsarge Pass."

PLACE NAMES FOR APPLICATION IN THE SIERRA NEVADA.

WASHINGTON, D. C., Oct. 8, 1902.

EDITORIAL COMMITTEE OF THE SIERRA CLUB.

Gentlemen:—In response to your suggestion that I express, for publication in the BULLETIN, my ideas regarding the selection of place names for application in the Sierra Nevada, I inclose herewith a few memoranda. I send them with some hesitation, as I realize that these are your mountains, rivers, lakes, and cañons, and that Californians have the sole right to attach names to them.

The natural features of the High Sierra possess a dignity, grandeur, and beauty scarcely equaled elsewhere, and the names by which they are to be known should conform as nearly as possible in dignity and beauty to these grand features. Petty or obscure names, clumsy names, names not euphonious or otherwise objectionable should not be applied, and, if such are in use, should, if practicable, be discarded.

There are two things to be done. The first is to discard from usage names not acceptable; the second, to select suitable names in place of them, and also to select names for features not yet named. As to the first, I would suggest that you begin by waiving all question of priority in the manner of the attachment of names. Because some

man has seen fit to attach a bad name to a mountain is no reason for condemning mankind to go on using this name for all time. The sooner it is changed the better. There is, however, one consideration to be weighed in this connection. If the name is in such general use, is so well known, that it is a question whether a substitute can be successfully introduced, it is better not to try to change. It is a question of "can" or "cannot," and when there is doubt it is better to be conservative.

As to the question what to drop and what to retain, I think that I can answer that in my suggestions concerning the selection of names, since I have quite as many negative as positive suggestions, and the policy pursued in the selection of new names carries with it a similar policy in the criticism of old ones.

In devising new names I should advise giving personal names very sparingly, and never those of unknown persons. No one has the right to name any natural feature after himself, his brother, sister, cousin, or aunt, unless he owns that feature. It is only in such a case that one has the right to require the world to use a name in which he alone is interested. In this matter we are altogether too good-natured, and our mountain regions are filled with Maude peaks, Mary lakes, etc., *ad nauseam*, in consequence. I would rarely name a mountain after a living man, however prominent. But there is no more fitting monument to the great men of the past, especially those who devoted their lives to the study of the earth,—geologists, geographers, and biologists,—than noble mountains bearing their names,—as Lyell, Dana, King, LeConte, and Whitney. I would not, however, search for men to immortalize in this way, for that would be putting the cart before the horse; but when a great man passes away I would search for a mountain worthy to bear his name and serve as a monument to his memory.

I would retain Indian names, if euphonious, and in the Indian languages of California most of them are very pleasing. I congratulate you on the possession of such names as Wawona, Kaweah, Tehachapi, Yosemite, Tehipiti, and hundreds of others almost as pleasant to the ear.

The Spanish blood in California has left you a rich legacy of beautiful names, which, with few exceptions, should be retained. I doubt if you realize, you who use them daily, the charm which these names have to the stranger. By all means retain the names connected with the history of your

State, especially the Mission period and the days of the Argonauts. Even though many of the latter are rude and uncouth, there is a halo of romance about them which should preserve them from destruction.

In naming a river carry the name up to the source. Don't cut it off and give a different name to its source as has been done with the Ohio, Missouri, Jefferson, etc. Don't call its principal branches "forks," but give them independent names. It is unfortunate that King's and Kaweah rivers are so subdivided; but I fear that the "forks" of these streams are so well known under their present designations that changes are impracticable, and that future generations will have to know them as the North, Middle, and South forks. It is, however, not too late to rename the "East Fork of Kern River."

Don't duplicate names. Don't attach long and clumsy names; they won't live. Leland Stanford Jr. University Peak will inevitably be abandoned, or shortened to Stanford Peak.

I should make many names descriptive of the form, location, surroundings, or history of the features. The shape, color, or location of a mountain often suggests a name,—as Castle Peak, Maroon Mountain; so with rivers, creeks, lakes, and valleys. I would suggest that in some cases the commonest, most noticeable or beautiful flowers found in valleys or about lakes and streams may suggest names for those features. In a similar manner the animals of the region may be used, although caution must be exercised in order to avoid duplications. We have already too many Beaver, Bear, and Deer creeks.

To introduce these names, you should see to it that they are placed upon those maps in most common use. Of course, they will go on the maps published by the Club. It is also most important that they be placed upon the atlas sheets which the United States Geological Survey is now preparing of this region, since these sheets will be used in compiling many other maps. They are the "Mother Maps."

Where changes have been made in names, or where, for any other reason, usage is divided between two or more names for the same object, the matter should be appealed to the United States Board on Geographic Names, whose decisions are followed by all Government offices, and, naturally, by the public generally. This Board, however, takes no part in the introduction of names, but only in the settlement of conflicting nomenclature.

HENRY GANNETT,

Chairman U. S. Board on Geographic Names.

REGISTER ON UNIVERSITY PEAK.

SAN FRANCISCO, CAL., Jan. 23, 1903.

MR. J. S. HUTCHINSON, JR., ASSISTANT EDITOR.

Dear Sir: I should like to report to the Club that the cylinder on University Peak is lacking a cap, and that the roll inside is consequently much damaged by water,—in fact, almost illegible.

On Sunday, June 15, 1902, Mr. Walter B. Bakewell and the writer climbed the peak from the meadow on East Creek where the trail to Bullfrog Lake turns north and ascends the rock slide. We had arrived there the night before and found it a cold one.

At 5 o'clock we left camp, following up East Creek and its succession of meadows, all of which were yet devoid of grass, until we came to the avalanche. This part was tiresome, as disintegrated granite does not give the best foothold, but we had the variety of some snow and huge granite blocks that proved to be much larger than apparent from below. We reached the summit at 11, and spent an hour enjoying the magnificent view and trying to locate the neighboring peaks.

It had been our intention to return by Bullfrog Lake, but the whole basin was filled with snow, the lakes frozen, and the way to them so steep that we did not care to attempt it. After a little lunch we returned much the same way that we had ascended, though we deviated somewhat in order to get nearer to the Kearsarge Pinnacles, and found ourselves in pretty rough country.

Any one intending to make the trip this coming summer should procure a new cylinder, or at least a cap.

Very truly yours,

PAUL L. MILLER.

REGISTER ON RED-AND-WHITE PEAK.

Last July there was deposited in a cairn on the summit of Red-and-White Peak a register containing the following memorandum: "Sierra Club Register No. 43, deposited on Red-and-White Peak, July 18, 1902, by Lincoln Hutchinson, Charles A. Noble, and J. S. Hutchinson,—altitude about 13,000 feet."

J. S. HUTCHINSON.

LETTER FROM CAPT. N. F. MCCLURE.

MANILA, P. I., Oct. 6, 1902.

TO THE EDITOR SIERRA CLUB BULLETIN.

Dear Sir: I inclose a brief account of the ascent of Volcano Mayon by an American officer, Lieutenant R. M. Barton,

Ninth Cavalry. Mt. Mayon, an active volcano, is situated in Southern Luzon, in the province of Albay, and is among the highest (if not the highest) mountains of the Philippine Archipelago.

I send you this article, clipped from the *Manila Cablenews*, thinking it possible that you might be able to make some use of it.

When the rainy season is over I hope to attempt some mountain-climbing. I have still the two record-boxes of the Sierra Club, and am very anxious to see them in place on some high peaks before I return.

During some seven months of the year it is impracticable to do much mountain-climbing, but the remaining five months are as fine as one could wish.

Hoping that the article may be of use to you, I am

Yours sincerely,

N. F. McCLURE,

Capt. and Q. M., Fifth Cavalry.

SCARPER PEAK, IN SAN MATEO COUNTY.

There is a mountain climb not far from San Francisco that is altogether worth while, and that few of the members of the Sierra Club have undertaken. One can accomplish the entire trip from San Francisco and back in two days' time, or even in a day and a half. I refer to the ascent of Scarper Peak, the highest point in the section of the Coast Range that lies directly south of San Francisco and that skirts the twenty miles of ocean shore southerly from Lake Merced.

A good starting-place for the day's climb is Wienke's resort at Moss Beach, which is about half a mile south of the Montara Fog Station. The U. S. topographical map (San Mateo Quadrangle) gives the location of this seaside hotel, and indicates the entire route which we took in making the ascent. Wienke's resort may be reached from San Francisco (distance about twenty miles) by a road that follows the coast southerly from Colma. A more circuitous way is to take the train to San Mateo, thence to go by stage to the town of Halfmoon Bay (thirteen miles), and thence northerly along the upper curve of Halfmoon Bay about six miles to Moss Beach. Either route lends itself to the bicycle as a mode of travel.

We reached Wienke's on the evening of November 4, 1902, by way of Halfmoon Bay, and after a hearty supper retired early, in order to make a good start the next morning.

There were five of us, each with his bicycle, and these we took with us the next day to the very summit. I should not urge, or even advise, others to do likewise, although this mode of travel was, on the whole, of advantage to our party. The descent of steep mountain roads on a bicycle is exceedingly dangerous, and one of our wheels, if not one of our wheelmen, was badly smashed on the way down.

Early on the morning of November 5th we took our way along the level road that leads southerly to Halfmoon Bay, and just before reaching Amesport Landing turned sharp to the left and towards the hills at the ranch of A. S. Barron. There is a wagon-road all the way to the peak, and this road is indicated on the map already referred to (latest edition). The climb is steep, and during our pauses for breath we turned and looked westward upon the broad expanse of the Pacific. To the south we saw the Santa Cruz Range; and to the north the San Pedro Peaks (called Montara Mountains on the map) loomed up far more commandingly than bald Scarper just above us.

Our road took us through occasional patches of greasewood, but the entire mountain-side was otherwise bare of shrub or tree. Two miles' climb brought us to Jessen's ranch (cattle-grazing is the chief industry on these slopes), and about a mile beyond McKay's ranch was reached. No other houses are to be found on the way to the summit. After a final climb of about three fourths of a mile, we reached the top of the ridge. This ridge, grass-covered and bare of trees, extends north and south for about six miles, and its top is almost level. Scarper Peak marks its southern end, and to the north it loses itself in the San Pedro Peaks. We had more than a mile to walk before reaching Scarper Peak, but the entire ridge in this vicinity is so high and so level that the chart must be resorted to to decide the exact point of greatest eminence. On the way up Mr. Barron and Mr. McKay had pointed out a round-top, which they called Maloney's Hill, as the highest peak hereabouts, and after careful study we decided that their Maloney's Hill is the peak which our government surveyors call Scarper. Its exact height is 1,952 feet.

We reached the peak at about 1 o'clock, having lunched on the way. A cairn of stones marks the eminence. This we rebuilt, and within it we deposited a Sierra Club cylinder. Then for half an hour we enjoyed the delightful panorama. The San Pedro Peaks to the north are superb in their grouping, and it is hard to believe that they are not as high as our

own vantage-ground. By the chart the highest of this group of cone-shaped peaks is only 1,700 feet. (The San Pedro Peaks are nearer to Wienke's than Scarper, and invite exploration.) More directly to the north we get a fine view of the San Bruno Mountain, and beyond it Tamalpais looms up clear and high. Then to the east lies San Francisco Bay, its shores dotted here and there with beautiful towns and villages, and its further limits guarded by the Contra Costa Range, the line of peaks generated by Diablo and Mount Hamilton. Immediately south of us is a deep and wide cañon across which we look down upon Ox Hill, one of the landmarks of this region; and to the west is the ocean, whose colors change in a marvelous way from moment to moment, as the shadows of fleecy clouds glide along its surface.

Just below us to the east are two lesser ridges, parallel to our own ridge, and here and there are the Spring Valley lakes, each held in by a huge dam thrown across a cañon, but at this distance giving no hint of man-made origin. And down the eastern slopes at our left we behold great patches of virgin forest, the stately redwoods marching up each steep cañon, with a grizzly old sentinel at the very top gazing sternly over towards the ocean, whence come the hostile fog-winds. Nearer at hand are many sights that gladden the eye. Great bunches of quail whirl away from us at every step. A deer moves along carelessly not a hundred yards away. A great, fine hawk sits unconcernedly upon a fence-post, seemingly proud of our close inspection. This is November, but the recent rains have brought out many wild flowers. Thus we behold, in one sweeping glance an ocean, a bay, lakes, and mountain-peaks and forests, and above the blue sky of California. Our climb is indeed worth while.

The descent of the eastern slope is full of delightful surprises. A plunge of two miles through tall, thick chaparral brings us to Pilarcitos Lake,—“Big Pilarcitos,” as distinguished from “Little Pilarcitos,” or “Stone Dam,” a couple of miles down the cañon. At Pilarcitos we are hungry, and no tramps ever received a better or more graciously given “hand-out,”—home-made bread, and apples, and honey, the latter not made in Germany. Then comes a climb over Fifield Ridge and another plunge ending abruptly at Lake San Andreas. The tramp habit has become fixed by this time, and our charming hostess at San Andreas regales us with luncheon number three. Then on down a steep hill our road takes us to Millbrae, where the conductor of a suburban train urges us to get aboard.

WILLIAM A. BREWER.

FORESTRY NOTES.

EDITED BY PROFESSOR WILLIAM R. DUDLEY.

THE FOREST RESERVATIONS AND PUBLIC LANDS.

In his last annual report Secretary Hitchcock states that fifteen new reservations have been established during the last fiscal year, making fifty-four in all, embracing 60,175,765 acres. By his request the Bureau of Forestry has become his official adviser in matters of forest policy concerning the forest reserves.

The report shows that 19,488,535 acres of public land have been disposed of during the past fiscal year, an increase of nearly 4,000,000 acres over the previous year. It is no secret that much of the timber-land has been acquired by private parties through fraudulent processes in evading the intent of existing laws. The Secretary says if the act of June 3, 1878, known as "The Timber and Stone Act," is not repealed it will result in the complete destruction of the timber on the unappropriated and unreserved public lands. Remedial legislation is strongly advised.

President Roosevelt in his recent message says: "In their actual use the desert-land law, the timber and stone law, and the commutation clause of the homestead law have been so perverted from the intention with which they were enacted as to permit the acquisition of large areas of the public domain for other than actual settlers and the consequent prevention of settlement." Northern California has been the scene of great activity in this evasion, the results of which are discussed below.

THE NATIONAL IRRIGATION LAW.

It is not the purpose of these notes to record the progress of irrigation; nevertheless, the passage of the National Irrigation Act on June 13, 1902, has such an important indirect bearing on the preservation of the Western mountain forests that its provisions should be noted. The act is entitled: "An act appropriating the receipts from the sale and disposal of public lands in certain States and Territories to the con-

struction of irrigation works for the reclamation of arid lands." The States mentioned in the act include the Dakotas, Nebraska, Kansas, Oklahoma, and all west. The fund thus created is to be known as the "reclamation fund," "to be used in the examination and survey for, and the construction and maintenance of, irrigation works for the storage, diversion, and development of waters for the reclamation of arid and semi-arid lands in the said States and Territories." Public lands to be benefited by the storage reservoirs can be taken up in lots from forty to one hundred and sixty acres only by actual home-builders, who are to pay for distributing canals connecting with the reservoirs.

Many of the proposed reservoirs will be located along streams rising in forest reservations already established, but wherever they are located the Hydrographic Bureau of the Geological Survey, under which the engineering work will be done, should insist on the protection and scientific management of all adjacent mountain forests as a guard against erosion and the consequent silting up of the storage lakes. In its application to the forested regions of the semi-arid West the logic of the Irrigation Act is irresistible; it is the early withdrawal of all public lands from sale or entry in all watersheds where storage reservoirs will be established, with instructions that such lands be classified as soon as practicable, and the lands important for stream protection be carefully protected and managed by the United States Bureau of Forestry.

WITHDRAW ALL PUBLIC LAND. It is understood that very large portions of the public lands in Utah and Nevada have been withdrawn from sale and entry by the Department of the Interior and are now undergoing classification to determine what portions are necessary to retain permanently as possessions of the United States in the interest of the National irrigation law. In its last issue the **SIERRA CLUB BULLETIN** advocated the withdrawal of all public land in California, and particularly that surrounding the Sacramento Valley. It has advised the latter nearly every year since 1898, and resolutions looking to the same end were forwarded to Washington in 1899 from the Sierra Club, and from the Los Angeles meeting of the American Forestry Association. Had the Interior Department seen fit to act at that time on these requests, large tracts of timberlands would have been saved to the Nation that have since gone into the hands of speculators and large lumber com-

panies, by the use of fraudulent, or "dummy" locators, under the Timber Claims Act. The State Mineralogist published a statement last September declaring that 250,000 acres of land in the mineralized sections alone of this State had passed to the hands of speculators during the previous summer, chiefly through the agency of the "dummy" locator.

**PROPOSED RESERVES
IN CALIFORNIA.**

Such charges forwarded to Washington have led the Interior Department to attempt checking such frauds in California by withdrawing over 6,000,000 acres in the region extending from the Siskiyou Mountains, through the Salmon and Trinity mountains, the Shasta region, and the region of Lassen's Butte. The purpose is to investigate the character of these lands, with a view to creating forest reservations over a whole or a part of them. Considerable opposition to this proposition has developed in the northern counties of California, partly no doubt from a misunderstanding of the effect of forest reservations on the prosperity of adjacent settlements. This misunderstanding has been fostered by the timber speculators and timber-owners, who assume that they bring the only prosperity to a region that is worthy of consideration. They also hold out the bait to local stockmen that private timber holdings will be open to the free range of sheep and cattle, while the Government reservations will be closed. In the heat of discussion the main points should not be lost sight of. These appear to be the fact of wholesale fraud against the Government, and the right use of these forests not only for the present but the future interests of all the people of the Sacramento Valley and the northern counties of the State. In view of these, the Government and the great body of the California people cannot afford to be swayed by the clamor of misinformed local sentiment in the mountain villages, backed by the skillful arguments of timber speculators and timber thieves.

We believe the best solution of the above questions lies in the withdrawal of all the public land in Northern California; indeed, the true interests of the State would dictate the suspension of all the Government lands in California, and an immediate attempt at their classification by experts, with reference to their mineral, agricultural, forest, and irrigational values. This should be followed by reports from the Bureau of Forestry and Hydrography recommending the lands to be held by the Government in permanent reservations and those to be thrown open to sale or settlement.

The forest-reservation policy inaugurated under the act of March 3, 1891, was an expedient to save portions of our National forests, and it was a valuable one; but it has not been and cannot be regarded as more than an expedient. Witness the yearly modifications of the boundaries of our existing reserves, in accordance with the recommendations of the Geological Survey, now engaged in surveying them. The only permanent foundation of reservations necessary to conserve our water supply and forest resources is a combined survey by competent men of the geologic, hydrographic, and forestal features of all public lands which could be possibly useful for such purposes.

It would be well for the honestly discontented men in Northern California to ask the question, Which is more likely to contribute to the permanent prosperity of their regions—the United States Government, with its competent engineers and foresters engaged in devising means for the present utilization and the permanent preservation of their natural resources, or the alien mill-owner, who is in the country solely to make money through the destruction of these natural resources, and that quickly?

PROPOSED STATE LEGISLATION. In the bill which the Water and Forest Association will bring before the present Legislature is the following provision:—

"Said Commissioners shall have power to enter into contracts with the Chief of the Bureau of Forestry of the Department of Agriculture for the purpose of studying the forest resources of the State and their proper conservation, and especially with a view of formulating a proper State forestry policy, to the extent of twenty thousand dollars."

The policy of the above cannot be too strongly commended. It is a recognition that the United States controls practically all the forested lands of California, aside from those in private hands, and that the Bureau of Forestry includes all the trained foresters of experience in the country, outside of a few Eastern universities.

By asking the Legislature to reserve, for the purposes of reforestation, denuded mountain lands which have fallen into the hands of the State through delinquent taxes and to buy adjacent denuded lands for a similar purpose, the association has again shown its good sense and its grasp of the situation. Perhaps nothing more absurd transpires than the biennial crop of resolutions calling on the State for appropriations to establish a forestry system or a fire patrol over lands it

has no right under existing laws to manage or control. At present it owns practically no forest land.

The Water and Forest Association, by resolution at its December meeting, asks the co-operation of the Sierra Club in supporting its own programme of work. All of their resolutions appear most worthy of support. The Sierra Club, as a pioneer leader in many of the questions now ardently advocated in this State in the interests of forestry, contemplates this progress most gladly.

REGULATION OF PRIVATE TIMBER-LANDS.	If a State forestry policy is to be inaugurated, the next step, and it is a perfectly logical one, is the enactment of State laws obliging private owners of timber-lands to protect their own timber from fire, and to follow a system of lumbering and reforestation that shall have the approval of the Bureau of Forestry. Unless this is done, adjacent Government forest reserves are in danger, and storage reservoirs in the same watershed with large private holdings may become much injured in effectiveness by the careless destruction of cover in lumbering.
---	---

THE WORK OF THE CALIFORNIA CLUB.	The California Club again asks Congress to consider the bill for the purchase of the famous Calaveras groves of Big Trees. This bill was before Congress last year, passed the Senate, was reported to the House favorably by its Committee on Public Lands, but failed to come to a vote. It seems to be demonstrated that the best judgment in this State and in Congress supports this bill. It now remains for the Club to show the House leaders that it is better politics to pass the bill than to listen to the secret opponents of it in the lobby.
-------------------------------------	--

The California Club presents a bill to the State Legislature asking for an appropriation to establish a Department of Forestry at the State University. The Sierra Club, through these pages, favored such a bill when introduced at a previous session. It is not of such pressing importance as the acquirement of the denuded lands by the State, the suspension and classification of the public lands in California, the transfer of the forest reservations from the Land Office to the Bureau of Forestry, or the protection of the unreserved forests from fire, but it is a good thing. Such a department would help in the educational campaign in favor of forest preservation.

THE CALIFORNIA REDWOOD PARK. This has become the official name for the State park recently acquired in the redwood forest of the Santa Cruz Mountains. On the 26th of September, 1902, the commission completed the work of purchase of 3,800 acres of land lying on both forks of Waddell Creek, in what is known as the Big Basin. The principal portion is heavily timbered with redwoods, mixed with Douglas spruce, tanbark-oaks, and madrones. The redwood is estimated to constitute eighty-five per cent of the heavy timber. Several hundred acres consists of cut-over and chaparral land, thrown in by the owners to allow the extension of the park lines to the northeastern high ridge and its road bordering the "basin," and is regarded as important in establishing a system of protection and fire patrol. The sum paid is \$250,000, available in five annual installments, beginning with 1902. The purchase has given general satisfaction, and the stubborn opposition of two city papers collapsed after the subject had ceased to be useful to them for political purposes.

On the day of the purchase the commission unanimously passed a resolution inviting Gifford Pinchot, the head of the Bureau of Forestry, to inspect the park and report to the commission recommendations as to the care and management from a forester's point of view. He has kindly consented to do so in the coming spring. The commission will ask for an appropriation of \$15,000 from the Legislature for the purpose of employing a fire patrol during the next two years, and for building necessary roads and trails. This with the intended extension of the railroad from Boulder Creek to the border of the park will make it available to the public, as far as it is wise to do so at present. The commission also hopes to employ a landscape architect to plan the drive so as to show the larger redwoods to the best advantage, and to indicate a general plan of treatment of the park, that shall make it more attractive, but shall in no way decrease the charm of the primeval redwood forest.

The Sierra Club takes pride that the redwood park which it proposed through its *BULLETIN* in 1896 has become so popular that many people and societies now claim the chief honor in its origination or establishment.

FERNOW'S "ECONOMICS OF FORESTRY." This is the most ambitious work, and for the thoughtful general reader the most important one, published in the English language on forestry. Its author, Dr. B. E. Fernow, is Director of the New York College of Forestry.

It purports to be "a reference-book for students of political economy and professional and lay students of forestry." The philosophical character of the work will be seen from the titles of the chapters on "The Relation of the State to Natural Resources," "The Forest as a Resource," "The Forest as a Condition," "Principles of Forest Policy," "Forest Policies of Foreign Nations." In addition there are chapters giving a practical exposition of methods pursued by the forester, a full appendix of notes, and a bibliography. The book is alive with important facts, and, while it errs occasionally in its statements of Western conditions, its views are characterized by a sanity and judgment wanting in most of the popular moralizings on the subject. Bearing upon the most important forest question of the Pacific Coast, is the following:—

"It is a short-sighted policy not to have withdrawn from entry long ago all the timber lands now in possession of the Government." . . . "It would be only rational that the extension plans for the development of irrigation systems in the West should include the rapid withdrawal from entry of all the mountain forest and brush lands, and their rational treatment, with the main object of preserving their soil-cover."

The book is a companion to Newell's "Irrigation in the United States," and is published by T. Y. Crowell & Co., New York. \$1.50.

To Compass the Unattainable

Nerve to traverse the narrow and ragged shelf of rock across a granite cliff, impending above a hungry chasm, or to cross a frail and trembling span, is denied to some men; and the steel-forged muscles needful to override and trample under foot obstacles at great elevations is often wanting, but

CALIFORNIA

invites to scenes within the reach of all, and a visit to them is likely to stimulate lagging powers to essay and conquer others. Have you visited

Yosemite Valley King's River Canyon and Paso Robles Hot Springs

Yosemite Valley and King's River Canyon feed the imagination and give a hunger for lakes and mountains and whatsoever lies beyond; and the Hot Springs sanitation at Paso Robles is athlete-creating—toning the system to the key that promises success to Sierra Club ambitions. They are all reached by the

SOUTHERN PACIFIC

...WRITE FOR LITERATURE...

E. O. McCORMICK,
Pass. Traf. Manager,
SAN FRANCISCO, CAL.

T. H. GOODMAN,
Gen. Pass. Agent,

WAKELEE & CO.

Leading Druggists

MAKE A SPECIALTY OF SUPPLYING USEFUL
HANDY REQUISITES FOR OUTING TRIPS

A Foot Powder . . .

That prevents Blisters, Aching and Sweating of the Feet ;

A Tablet of Kola . . .

That Stimulates and makes long Journeys without Food possible;

Toilet Creams . . .

In collapsible Tubes convenient for Packing ;

Roll Ups . . .

For Hair Brush, Soap, Comb, &c. ;

Dr. Noe's Poison Oak Salve . . .

A necessary Remedy

Camelline for the Complexion . . .

Prevents, cures and eradicates Sunburn, Poison Oak, Freckles and Heat Rash

ARE A FEW OF THE MANY USEFUL ARTICLES
THAT MAY BE FOUND AT THE STORES OF

WAKELEE & CO., Bush and Montgomery Streets, and
Polk and Sutter Streets

Are you looking for outing suits in Khaki that will not rip? We have them of our own make in Norfolks, knickerbockers, hunting coats, riding trousers, etc., that the Committee says are alright, and that we are to furnish them this year.

Fancy flannel, serge and white duck outing suits, hats and furnishings—in fact everything in wearing apparel for summer use—will be found in our store.

THE HASTINGS CLOTHING CO.

(BENEDICT & TURNER)

Montgomery, cor. Sutter Street
San Francisco

Everything that is Practical and Necessary in

OUTING GOODS

(See circular letter)

Your Outing this year will be to Lake
Eleanor. We have what you want in

FISHING TACKLE

A few of our SPECIALTIES adaptable to
the trip are

CANVAS NORFOLK OUTING SUITS
PRACTICAL MOUNTAIN SHOES
KENWOOD SLEEPING BAGS
AIR MATTRESSES
CANVAS FOLDING BOATS

CLABROUGH, } 538 Market St.
GOLCHER & CO. }
SAN FRANCISCO

GROCERIES

FOR

Mountaineers and Campers

A SPECIALTY

We know the right kind of provisions necessary for campers,
and the exact amounts.

We have a salesman at our Pine Street store who has had a
wide experience in this line and who will make out lists for
approval.

Our condensed soups and other foods have been found to be
just the thing for rough trips where reduced weight is essential.

We pack our goods so they arrive in the best possible con-
dition.

GOLDBERG, BOWEN & CO.

432 Pine Street

San Francisco

A remarkable style of men's leggings that surpasses other kinds in durability; in their ease of adjustment; in their newly devised fastening, leaving nothing to catch on the brush; in their correct hygienic fit to the leg with enough elasticity to be comfortably close without compressing the veins; and in the keeping of all dirt out of the shoe.

These leggings will be sold at \$1.00 per pair, and to out-of-town purchasers can be mailed for 20c postage, so that mail orders (accompanied by measurement around the largest part of the calf of the leg over the trousers and a remittance of \$1.20) will be promptly filled.

Also an alpenstock that won't break and that is n't too heavy.

Fishing tackle specially contrived for the great fishing streams of the Sierra;

And axes with scabbards; goggles for snowfields; also, hunting knives, will be furnished by

S. J. DEAN

1502 Market Street

San Francisco

NEVILLE & Co.

31 and 33 California Street

MANUFACTURERS OF AND DEALERS IN

Tents,
Awnings,
Dunnage Bags,

BAGS, TWINES, HAMMOCKS,
CAMP FURNITURE, ETC.

TENTS TO RENT

AS THIS IS THE BUSY SEASON ORDER AT ONCE

PUBLICATIONS OF THE SIERRA CLUB

- No. 1.—Articles of Association, By-Laws, and List of Members.
- Nos. 4 and 5.—Maps of Portions of the Sierra Nevada adjacent to the Yosemite and to King's River, 1893.
- No. 8.—Table of Elevations within the Pacific Coast, 1895, by Mark B. Kerr and R. H. Chapman. *Price, 25 cents.*
- No. 12.—Map of the Sierra Region, May, 1896. *Price, \$1.50.*
To be had of Theodore S. Solomons, 508 California Street, San Francisco, California.
- Nos. 2, 3, 6, 7, 9, 10, 11, 13, together forming Volume I. of the SIERRA CLUB BULLETIN.
- Contents of Volume I.—Ascent of Mt. Le Conte; Address on Sierra Forest Reservation; California Outing; Crater Lake, Oregon; Diamond Hitch; Explorations North of Tuolumne River; Forest Reservations; From Fresno to Mt. Whitney, via Roaring River; From Gentry's to El Capitan and Yosemite Falls; Grand Cañon of the Tuolumne; Head-waters of King's River; Kern and King's River Divide; King's River and Mt. Whitney Trails; Knapsack Tours in the Sierra; Mt. Bernard; Mt. Tahoma; Mt. Whitney Trail; New Grove of Sequoia Gigantea; Notes on the Pine Ridge Trail; Route up Mt. Williamson; Search for a Route from the Yosemite to the King's River Cañon; Sources of the San Joaquin; Three Days with Mt. King; Through Death Valley; Through the Tuolumne Cañon; Tramp to Mt. Lyell; Upper Sacramento in October; Notes, Correspondence, and Reports.
- Nos. 14, 15, 16, 17, 18 and 19, together forming Volume II. of the SIERRA CLUB BULLETIN.
- Contents of Volume II.—Ascent of the White Mountains of New Mexico; Basin of the South Fork of the San Joaquin River; Conifers of the Pacific Slope, Parts I and II; Day with Mt. Tacoma; Early Summer Excursion to the Tuolumne Cañon and Mt. Lyell; Expedition of Prince Luigi Amedeo of Savoy to Mt. St. Elias; Explorations of the East Creek Amphitheater; From Mt. Rose to Mt. Shasta and Lower Buttes; Kaweah Group; Lava Region of Northern California; Mountain Trips: What to Take and How to Take It; Neglected Region of the Sierra; Observations on the Denudation of Vegetation—Suggested Remedy for California; On Mt. Lefroy August 3, 1896; On Mt. Lefroy August 3, 1897; Philip Stanley Abbot; Taking of Mt. Balfour; To Tehipite Valley from the King's River Grand Cañon; Up and Down Bubb's Creek; Wanderings in the High Sierra Between Mt. King and Mt. Williamson,—Parts I and II; Woman's Trip Through the Tuolumne Cañon; Yosemite Discovery; Notes, Correspondence, and Reports.
- No. 20.—Volume III., No. 1, pp. 1 to 118—price \$1.00.—Ramblings Through the High Sierra (Reprinted from "A Journal of Ramblings," privately printed in 1875); Editorial Notice; Ouzel Basin; Forestry Notes.
- No. 21.—Ramblings Through the High Sierra. (Specially bound; without Editorial Notes, etc.)
- No. 22.—Volume III., No. 2, pp. 119 to 188.—Lake Tahoe in Winter; Ascent of "El Yunque"; Another Paradise; King's River Cañon Trail Notes; Ascent of "Matterhorn Peak"; Reports; Notes and Correspondence; Forestry Notes.
- No. 23.—Volume III., No. 3, pp. 189 to 270.—Parks and Peaks in Colorado; The Work of the Division of Forestry in the Redwoods; The Mazamas on Mt. Jefferson; Wagon-Trips to the Sierra; The Big Basin; The Re-Afforesting of the Sierra Nevada; The Descent of Tenaya Cañon; An Ascent of Cathedral Peak; A Glimpse of the Winter Sierra; Notes and Correspondence; Forestry Notes.

PUBLICATIONS OF THE SIERRA CLUB — *Continued.*

- No. 24.—Volume III., No. 4, pp. 271 to 339.—The Mazamas on Mt. Rainier; Lassen Buttes: From Prattville to Fall River Mills; Zonal Distribution of Trees and Shrubs in the Southern Sierra; Mt. Washington in Winter; Round About Mt. Dana; Notes and Correspondence; Forestry Notes; Reports.
- No. 25.—Volume IV., No. 1, pp. 1 to 75.—Joseph Le Conte in the Sierra; El Capitan; Camp Muir in Tuolumne Meadows; The Sierra Club Outing to Tuolumne Meadows; In Tuolumne and Cathedral Cañons; The Great Spruce Forest and the Hermit Thrush; From Redding to the Snow-clad Peaks of Trinity County; Trees and Shrubs in Trinity County; Notes and Correspondence; Forestry Notes; Reports.
- No. 26.—Vol. IV., No. 2, pp. 76 to 176.—Into the Heart of Cataract Cañon; My Trip to King's River Cañon (Reprint); Conifers of the Pacific Slope, Part III; Birds of the High Mountains; Notes and Correspondence; Forestry Notes; Reports.
- No. 27.—A Flora of the South Fork of King's River from Millwood to the Head-Waters of Bubb's Creek.
Price, 75 cents.

On receipt, in good condition, of a full set of the numbers comprising Volumes I. or II., together with the sum of \$1.25, a bound volume will be forwarded, postpaid.

Each number 50 cents.

Volume I., No. 3, and Volume II., No. 1, are out of print.

Members may have additional copies of the bulletins at half rates.

Copies of the above publications may be had on application to the Secretary, Room 16, Third Floor, Mills Building, San Francisco, Cal.

+pind



PUBLICATIONS OF THE SIERRA CLUB

Number 29

SIERRA CLUB BULLETIN

Vol. IV

No. 4



JUNE, 1903

SAN FRANCISCO, CAL.

1903

SIERRA CLUB BULLETIN

Vol. IV.

JUNE, 1903

No. 4

CONTENTS:

	PAGE
AMONG THE SOURCES OF THE SOUTH FORK OF KING'S RIVER, Part II. <i>J. N. Le Conte</i>	253
Plates LXXVII., LXXVIII.	
THE COAST SIERRA FROM CALIFORNIA TO PANAMA <i>M. Hall McAllister</i>	264
RALPH SIDNEY SMITH <i>William A. Brewer</i>	274
Plate LXXIX.	
CLIMBING MT. BREWER—THE CLIMAX OF THE SIERRA CLUB OUTING FOR 1902 <i>Edward T. Parsons</i>	278
Plates LXXX., LXXXI., LXXXII.	
TABLE OF ELEVATIONS OF PEAKS IN THE SIERRA NEVADA MOUNTAINS OVER 12,000 FT. ABOVE SEA-LEVEL. <i>J. N. Le Conte</i>	285
KING'S RIVER OUTING, 1902—BOTANICAL NOTES, INCLUDING AN IMPORTANT DISCOVERY <i>J. G. Lemmon</i>	292
NEAR THE KERN'S GRAND CAÑON <i>William R. Dudley</i>	301
Plates LXXXIII., LXXXIV., LXXXV.	
ORGANIZATION OF THE SIERRA CLUB	308
SECRETARY'S REPORT	309
TREASURER'S REPORT	310
NOTES AND CORRESPONDENCE:	
New Maps of the Sierra Nevada Mountains	311
The Le Conte Maps	311
How to Make "Skies"	312
Organization of the Montara Club	313
Another View of the King's River Outing	314
Mt. Whitney Club Journal	318
FORESTRY NOTES <i>William R. Dudley</i>	319

All communications intended for publication by the SIERRA CLUB, and all correspondence concerning such publication, should be addressed to the Editor, J. S. Hutchinson, Jr., Sierra Club, Claus Spreckels Building, San Francisco, California.

Correspondence concerning the distribution and sale of the publications of the Club, and concerning its business generally, should be addressed to the Secretary of the Sierra Club, Room 16, Third Floor, Mills Building, San Francisco, California.

CALIFORNIA

.. Will be the...

Playground of the World

When its charms of climate and scenery are better known. President Roosevelt called it "The Land Beyond the West,"—a land apart, widely celebrated but little known.

The Sunset Magazine

is devoted to this unique land and to others on this wonderful rim of the continent. It is served by able writers, is notable for its

CAREFUL EDITING

BEAUTIFUL TYPOGRAPHY

and the ARTISTIC MERIT

of its engravings. \$1 a year; ten cents a month.

...Send a Copy East...

Published by the Passenger Department of the

SOUTHERN PACIFIC

Address JAS. HORSBURGH, JR.,
4 Montgomery Street, San Francisco

H. E. Skinner Co.

801 Market Street, cor. Fourth

San Francisco

*Are making Special Complete Outfits for
both Men and Women for Outing and
Mountain Climbing. Get one of our
lists of Sierra Club Requisites and
examine our stock.*

Walk-Over

924 & 926 Market Street, San Francisco

111 S. Spring Street, Los Angeles



OUR SIERRA MOUNTAIN BOOT

as perfected from suggestions of a member of the Sierra Club, is certainly the best boot in America.

The stock is the best calf; the color is a beautiful shade of tan; the sole is double, and has a good extension which runs from heel to heel, giving good protection to the upper. This extension in shank enables the climber to step on sharp rocks in center of the foot without danger of hurting the boot or slipping.

For this season we will carry an assortment in stock, but advise those contemplating an outing to call as soon as possible, and if it is necessary we will make them to measure at same cost.



*The price ranges from \$5 to \$7.50
It takes four weeks to get these
boots made to order.*

Walk-Over Shoe Co.

F. F. WRIGHT & SON
Proprietors

...THE...
CALIFORNIA SUMMER

When the Facts are known,
this land of the orange will be as famous for its
SUMMER WEATHER

as for its Spring-like winters. Mountain valleys,
regions of glacial lakes, home of giant sequoias,
the redwoods rendezvous in the Coast Range, the
open terraces near the sea, and the seaside cities
for six hundred miles, have an

**ALMOST IDEAL
SUMMER CLIMATE**

No heat, no sultry nights, no dust, no insect pests,
no storms or clouds, no sudden changes, but tonic,
balsamic, bracing air for months together.

TELL IT IN GATH

Remind your Eastern friends. Send them
some of the illustrated folders of the

SOUTHERN PACIFIC

LAKE TAHOE

...DESCRIBING...

KING'S RIVER CAÑON

SHASTA REGION

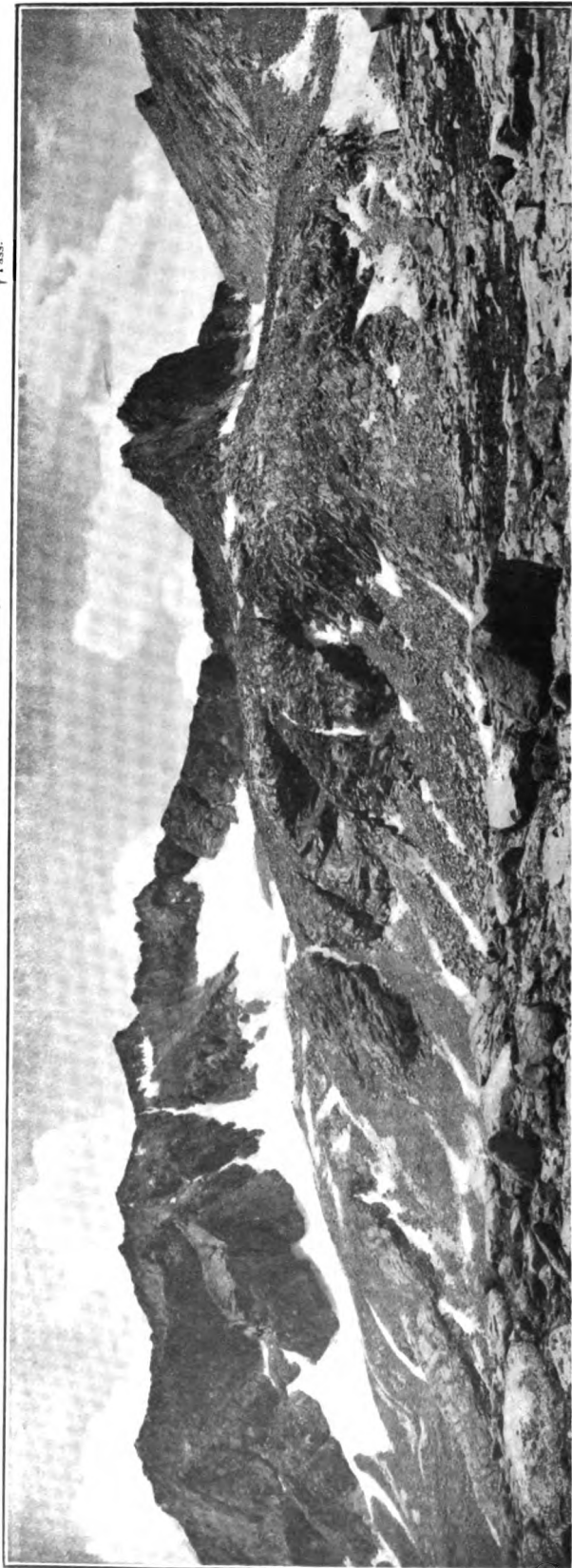
COAST RESORTS

YOSEMITE VALLEY

and many others. Places more attractive than the
world elsewhere can show. Free of agents, or at

INFORMATION BUREAU

613 Market Street, San Francisco, Cal.



CARTRIDGE CREEK DIVIDE, FROM FOOT OF SPLIT MOUNTAIN.

From a photograph by J. N. Le Conte.

SIERRA CLUB BULLETIN.

VOL. IV.

SAN FRANCISCO, JUNE, 1903.

No. 4

AMONG THE SOURCES OF THE SOUTH FORK OF KING'S RIVER.

BY J. N. LE CONTE.

PART II.

I had long been desirous of visiting Split Mountain, or the South Palisade by way of Cartridge Creek and the Middle Fork of King's River, and the glimpse of that region obtained from the summit of Arrow Peak still further strengthened my desire. Mr. and Mrs. Kanawyer had planned to take such a trip with us, and, therefore, after making the ascent of Mt. Brewer with the Sierra Club party, Mrs. Le Conte and I returned immediately to the King's River Cañon to make preparations for a stay of a couple of weeks in that interesting portion of the Sierra. On the morning of July 12th we were ready to start, and as the Kanawyers found it impossible to leave their business that day, we decided to go on alone and await them in Simpson Meadow on the Middle Fork.

Accordingly after lunch we took our way up the dusty Copper Creek trail, and, after passing a number of our Sierra Club acquaintances on their return from Goat Mountain, made camp a second time at Wood's Corral. Next morning saw us off at half-past six, this time on the regular Middle Fork trail. This zigzags up the top

of an old lateral moraine until, shortly after branching from the Goat Mountain trail, it turns sharply to the left and climbs a steep forest-covered slope to the top of the ridge between Copper and Granite creeks. From this point it descends into and crosses Granite Basin to the summit of the Middle Fork Divide, 10,600 feet above the sea. The walk across Granite Basin is most interesting. The trail winds this way and that among the wilderness of boulders and ledges, and at times there seems to be no solution to the labyrinth. Further up it opens out into a large meadow, and the traveling would be easier were it not for the swarms of mosquitoes. The pass itself is not rough, and the only difficulty in crossing it is encountered in the early summer when the snow lies deep at that elevation. For a distance of several miles on the other side the trail is very similar to that in Granite Basin as it threads its way among the upper tributaries of Dougherty Creek. Just below the timber line we stopped for lunch at a rich little Alpine meadow near a splendid cold stream. By 12:30 we were on the march again, and after passing through Dougherty Corral, finally made the top of the ridge beyond about 5 P. M. From this point the trail descends 4,000 feet into the Middle Fork Cañon, and though through timbered country all the way, it is rather rough in places. It was growing late, so we plunged down the long descent toward the distant spot of green which marked Simpson Meadow. Directly across the gorge rose the rugged mass of Woodworth Mountain, surrounded by a glorious retinue of crags and pinnacles. Although its base at the river was 3,000 feet below, its summit soared to an even greater height above us. So truly majestic was this great mountain with its lower parts buried in the gloom of the deep cañon and its summit flashing in the rays of the setting sun, that I could not resist the temptation of trying a photograph, though

night was coming on and it was still uncertain whether we could reach the river before dark. Nevertheless we managed to make the meadow just in time, for the stars were already coming out as we threw down our things on the first level spot we could find on the banks of the river.

Simpson Meadow is the most glorious spot for a camp that I have ever found in the Sierra. It is a great, open meadow situated on the banks of the main Middle Fork of the King's at an altitude of about 6,000 feet. It is not swampy and low like so many others, but is twenty feet or more above the river, and is well drained. Scattered about are splendid groves of yellow pines, with their feet planted among the very flowers and grasses. In some places the banks slope gradually down to the river, covered with grass to the very edge. When we were there the grass was knee-high in many places, and one could wade up to his waist among columbines and tiger lilies. Just above the meadow Goddard Creek enters the river from the north, and the angle between this latter and the main river above is occupied by the huge mass of Woodworth Mountain. Five miles above, the river makes a turn from the north, thus enclosing Woodworth Mountain on the east also. Entering the river from the south are a number of small creeks which furnish good camping places.

The chief charm of Simpson Meadow is its comparative inaccessibility. There are but three routes into it; by Granite Basin, by a similar trail from the north, and by way of the river cañon from Tehipite Valley. The two former are blockaded by snow until well into July, and the latter is so very rough and dangerous that few attempt it when the water is high. But he who braves the difficulties of a trip up the Tehipite Cañon in early June, and reaches the meadow in safety is well repaid, for he

will surely be alone in this glorious solitude for many weeks to come.

Mrs. Le Conte and I spent four days in this beautiful spot, dividing our time between the simple enjoyment of the scenery and the more exciting and equally important duty of fishing. On the 16th at 10 P. M., Mr. Curtis Lindley and Mr. George Lambert arrived from the King's River Cañon with the news that illness prevented the Kanawyers from joining us. This was most unfortunate, and would have entirely wrecked our proposed trip to the summit had not Mr. Lindley agreed to go with us in their stead. The 17th was devoted to fishing and resting by the new comers, and finally on the morning of the 18th we all packed up and struck out on the trails again, Mr. Lambert to return to the King's Cañon again, and the rest of us up the cañon of the Middle Fork toward the "Promised Land".

On our trip across we had brought with us our good mule "Blackie," a beast well accustomed to the roughest of trails. Mr. Lindley had brought over two burros, the best "climbers" that Mr. Kanawyer possessed, so we were well fitted for a rough trip.

A tramp of five miles up the south bank of the river brought us to Cartridge Creek, a large tributary entering from the east. Here we had considerable trouble in crossing, for the stream is nearly as large as Bubb's Creek, and had washed in stones and rubbish under the old foot-log until it made a fine waterfall over it, a most unpleasant state of affairs indeed. On the other side we found the cabin built by Mr. George Fiske, many years ago, when working on his mine just above this point on the mountain side.

The Cañon of the Middle Fork is, as is well known, impassable for pack-animals above this point. So after resting a while at the cabin, we took our way up the north

side of Cartridge Creek, for this stream I knew had been ascended by Professor Brown in 1895.* There was just enough of a trail visible to show that sheep-men had been up that way before. For the first two and a half miles the traveling was not dangerous or even difficult, but it was exceedingly steep, and rough, and disagreeable, with considerable brush to get through, and with loose footing. Above this the cañon opened out into a gravelly flat, at the head of which were cliffs across the gorge in singularly forbidding array. Over these there plunged one of the most magnificent falls I have seen outside of the Yosemite itself. Triple Fall is formed by two almost equal branches of Cartridge Creek. That to the left or north is slightly the larger and may be considered the main branch of the stream. These approach within a few feet of one another and fall side by side into the same pool. The combined waters immediately make a second leap into the narrow chasm below.

The cañon seemed entirely blocked by this fall, so we decided to work our way across the flat, and camp at its base, in order that we might search out a route in the afternoon. Considerable difficulty was encountered in getting across the flat, as it was covered at its upper end by a well-nigh impenetrable tangle of brush and rocks. Camp was finally made where a number of huge white firs shade a diminutive creek to the right of the fall, and on the steep mountain side. After a hasty lunch at 1 P. M., I started up the cañon by what appeared to be the only practicable route. This soon proved to be too rough for pack-animals, and I was in despair of getting any further up the stream with them. On reaching the top of the fall, however, a series of "monuments" appeared along the very brink of the chasm. Following these on up the creek, I found traces of an old sheep route, so taking it

* SIERRA CLUB BULLETIN, Vol. I, No. 8, May, 1896, page 299.

for granted that the way was clear in this direction, I traced them back toward camp. They led along the edge of the fall and down the face of the bluff by a series of impossible-looking ledges, and furnished a complete solution to a very bad predicament.

Later in the afternoon we all went up to the fall, and found a fine point of view on the top of a ledge which jutted out over the chasm about opposite the top of the lower leap. This latter we estimated to be about 200 feet high, while the upper ones were about half this height. The view down Cartridge Creek Cañon in the opposite direction was remarkably fine. The huge crags of Woodworth Mountain completely blocked the lower end, and they rose in sheer black rocky walls at least 5,000 feet above the river. Taking both abruptness and height into account, these form the finest cañon walls I have ever beheld.

Next morning we were on the move before six o'clock, and navigated our mule up the jagged ledges to the left of the falls. At the top we ran into a talus slope of slate fragments, and after wasting an hour trying to cross, were forced to ford the creek and work along the southern bank. A few hundred yards above, a second crossing became necessary, and so we picked our way up this wild cañon, now cutting a way through the brush, now climbing high up the sides to avoid rock piles, and, near the head of the cañon, wandering through a wilderness of glacial erratics. Throughout nearly the whole distance it was necessary for one of the party to search out the route ahead for a hundred yards or so, return and bring up packs when the way proved clear, then go ahead again, and so on. By noon we had made three or four miles and stopped for rest in a glaciated flat. A mile or so above there arose a beautiful pyramidal rock about whose base the creek forked, so we decided to camp near it that night

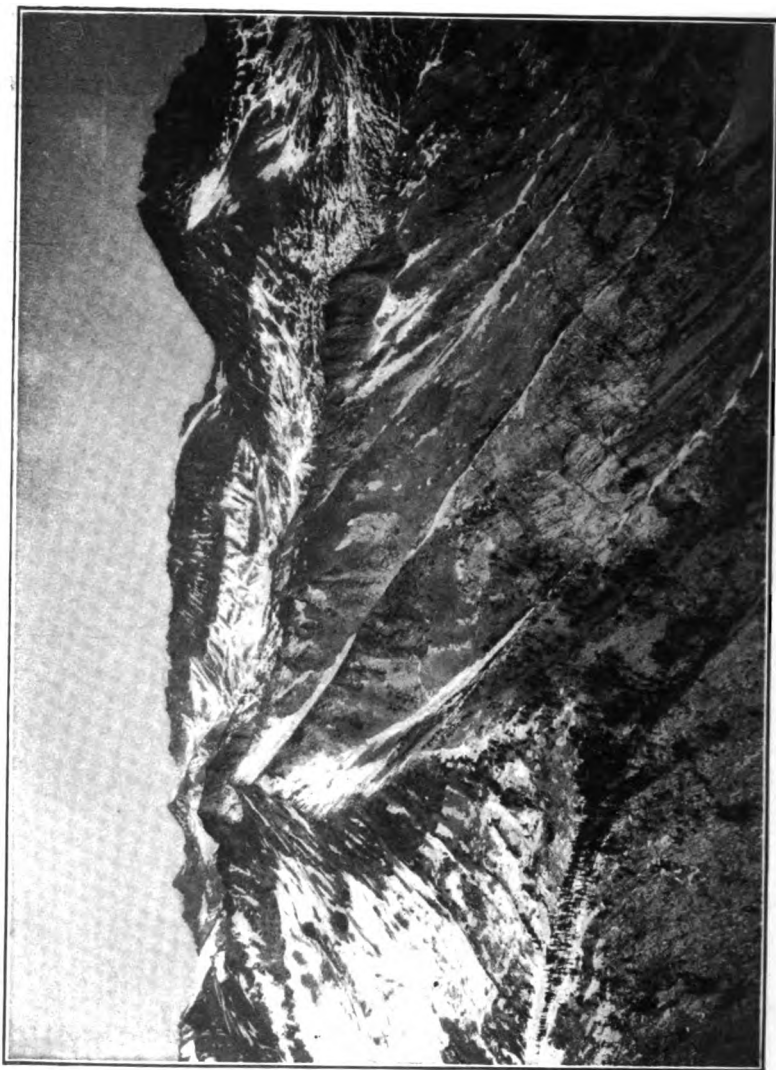
and ascend it next morning to get our bearings. The afternoon's walk was not so rough, and enough monuments were discovered to make the tramp fairly easy. Toward evening we climbed a steep slope by a series of ledges, and finally came out in a tamarack grove at the base of our rock.

Directly at its foot was a beautiful lake, fringed with tiny meadows on one side, and guarded on the other by fine cliffs of white granite, which could be traced far down beneath the clear waters till lost in their blue depths. Across the lake rose a splendid range of peaks of brilliant red slate and pure white granite. Altogether it was a most charming camping spot, far removed from the usual routes of travel.

Early next day we all started up the central peak to find out where we were, for none of us had been able to recognize the surrounding mountains. After passing around the lake it proved an easy scramble to reach this summit, which was about 11,500 feet in height. We now saw that Cartridge Creek headed by two branches in a wide basin literally covered with lakes. I had supposed that it headed back to the Main Crest, but this was now seen to be untrue, as the eastern rim of the lake basin was not more than a few miles away, and but little higher than our standpoint. Through gaps in this eastern rim could be seen a few giant summits far to the east. Evidently our point was not high enough to be of any value, so we descended to the lake, and Mr. Lindley and I turned our energies toward a great red peak immediately south of the lake, while Mrs. Le Conte returned to camp. A lively scramble of about an hour and a half brought us to a gap in the southern rim, where immediately a glorious view of snowy Sierras burst upon us. Our peak was five or six hundred feet higher, and to the right, and by noon its summit was reached. The whole vast region now

lay at our very feet. Straight down below and to the southeast was the great cañon of the upper South Fork, and directly across this gorge rose the ragged summit of Arrow Peak only two miles and a half away. Overtopping the rim of our lake basin in every direction towered the great peaks of the Middle Fork. Split Mountain, the goal of our trip, rose high against the eastern sky, and we could see that a wide depression separated it and the Main Crest from the range at the head of the lake basin. Whether this was drained by a great branch of the South Fork, or by Palisade Creek of the Middle Fork we could not tell. Far to the north rose the main chain of the Palisades, dominated by Mts. Jordan and Sill.

On reaching camp at 2:30 P. M., it was decided to push on up the lake basin next day, and search for a route across the range at its head. Accordingly on the morning of the 23d we left out beautiful Lake Marion and pursued a devious course among the lakes, ledges, and rocks to the east, finally camping at the last straggling group of alpine pines about noon. The afternoon was devoted to exploring. Mr. Lindley went to examine a promising-looking pass on the eastern divide, while Mrs. Le Conte and I worked northward. We reached the top of the ridge in that direction in the course of an hour or so, and my hopes were raised as we approached a pass, by undoubted indications of sheep runs. But alas; sheep can be taken where pack-animals cannot, and our pass turned out to be choked with snow, which swept in a broad field down into ragged piles of granite talus at the margin of a desolate lake. We returned to camp at 3 P. M., but Mr. Lindley did not get in till nearly sundown. He reported that he had been able to reach the top of the divide after a dangerous climb, and had had great difficulty in getting down again; also, that the eastern side of the divide was a precipice, that the stream on the other side



SPLIT MOUNTAIN, FROM ARROW PEAK.
From a photograph by J. N. Le Conte.

was the source of the South Fork, and that the pass by which Professor Brown had left the basin was undoubtedly to the south and nearly opposite Arrow Peak.

Evidently all hope of getting animals over the eastern divide had to be given up, so staking our animals with long ropes, in an open meadow, we all shouldered our knapsacks and set out next morning, trusting to luck to find some way out of our difficulty. We selected another notch further north than the one Mr. Lindley had explored, and after three hours of the most toilsome work, climbing over nothing but huge talus fragments, reached the top. The other side broke off in precipices to the east, and though I tried hard to get down, I was obliged to turn back when only half the distance had been covered. As a last resort we determined to work around the face of a point just north and look for a footpass beyond. Fully two hours were consumed in this operation, when to our inexpressible joy a really passable "pass" was discovered; the only point where the Cartridge Creek Divide can be crossed to the east. Great fields of snow furnished a comparatively easy descent on the other side, but this was soon followed by slow work on the talus below. By noon the rough work was over, and we walked out on the almost level though treeless basin at the head of the South Fork. Most of the afternoon was consumed in crossing it, and by evening we were searching for a place to "camp" in the most desolate wilderness that can well be imagined. No trees were in sight, but a few dead stumps were scattered among the rocks, and the problem was to find some of these in reasonable proximity to water. In this we were fairly successful, and Mr. Lindley rolled in enough stumps for a medium-sized camp fire. Here we roosted on a sand flat among the rocks till the welcome signs of breaking day, and the urgent necessity of

thawing out half-frozen feet, got us out of our down sleeping-bags at 4 A. M.

The whole difficulty of ascending Split Mountain lies in reaching its base. After that the ascent of the peak itself is merely a long walk, for, though the summit is 14,200 feet in elevation, not a single difficulty did we encounter. We reached the top at 8 A. M. on July 23d, and found no trace whatever to show that it had ever before been ascended. So we built a monument, and in it deposited our Sierra Club register box, No. 44.

The view to the south along the main axis of the Sierra Nevada is the most rugged I have ever seen. For eighteen miles to the south, and eighteen miles to the north not a single one of the countless giants of the Main Crest has ever been climbed. We were in the heart of the High Sierra. Far to the southwest rose the beautiful Arrow Peak, and across the great cañon at its base, the other peak, climbed but a few days before. It was seen now that the base of Split Mountain could be easily reached with pack-animals from the timbered basin at the foot of Arrow Peak. Only five miles south there stood a great rounded mass of red slate on the Main Crest, and I allowed myself to change the name Red Mountain given it by Professor Brown, and already applied to scores of the slate peaks of the Sierra, to Mt. Pinchot. In the other direction towered the North Palisades, here seen on edge, and between the pinnacles of Mts. Jordan and Sill there loomed on the far horizon the airy summit of Humphreys. Directly across the basin to the west stretched the Cart-ridge Creek Divide, a continuous wall topped with needles and streaked with snow, while close at hand was the first rivulet trickling out of a snowbank that forms the South Fork of King's River.

By noon we had returned to our desolate camp, and after a hasty lunch, struck across the level basin. We

knew the way now and lost no time exploring for "passes," so the top of the divide was reached by 4:30, and at 7 P. M. a very tired but triumphant trio threw down three very dirty knapsacks at a little group of tamaracks, which by this time seemed like home.

The following day we moved camp to the lower end of the lake basin, where the feed was better, and on the 25th Mr. Lindley and I made a flying trip over the sheep pass to the north, across the basin of the branch of Cartridge Creek that drained the lakes on its other side, and finally succeeded in climbing a peak on the dividing ridge between Cartridge and Palisade creeks. From this point I succeeded fairly well in mapping the basin of the latter. We also made out a great green meadow on the main Middle Fork about ten miles above Simpson, which would be an ideal point for a central camp from which to explore the head of the river.

Next day we started down the cañon, and by crossing the creek six or seven times, avoided many of the rough places encountered on the way up, so that Fiske's cabin was reached shortly after noon. That evening we ate canned chicken, canned cherries, and fresh trout in the comparative civilization of Simpson Meadow.

THE COAST SIERRA FROM CALIFORNIA TO PANAMA.

BY M. HALL McALLISTER.

Having been a member of the Sierra Club for several years, and having done nothing more than bother the Secretary to receipt annually for my dues, I beg to submit this paper as an unofficial effort to promote the feeling that individual work is the only sure forerunner of the ultimate success of the whole.

Having made three business trips to and through Central America, and having had sufficient leisure to see and admire its wonderful mountain scenery, I give the following as a joint description of my three trips which may serve to guide travelers by the same route as to what they can expect to see, if they are fortunate as to weather; and as travelers frequently like to know what and where curios or souvenirs are to be had, I also inclose this information.

After leaving the Californian coast there are no visible high mountain ranges until you pass Magdalena Bay in Lower California, and from there to Cape St. Lucas, which is the end of the peninsula, the coast lines show a number of high arid ranges, but nothing of particular note, and at this point you cross the tropic of Cancer and pass, $23\frac{1}{2}$ degrees north latitude, into the tropics. Two days after leaving Mazatlan, or about one week by steamer from San Francisco, the first really high mountain is seen. This is the volcano of Colima, altitude 12,750 feet, and is situated about twenty miles back of the port of Manzanillo, Mexico. Near the base of this volcano is the town

of Colima, which is connected by rail with Manzanillo. Colima Mountain is one of the highest points of quite a group of peaks, and is but seldom seen from passing steamers by reason of the clouds continually hanging over it. One of the peaks of this group, called Nevado, is 14,000 feet high, and several are as high as Colima. As a volcano Colima shows but little activity, the crater occasionally throwing out clouds of steam and smoke, but little if any lava.

At Manzanillo the natives sell scented wood glove and handkerchief boxes and Mexican curios.

After leaving the Colima group no high ranges are seen until we pass Acapulco. This port, with its landlocked harbor, is well known. At this point the curios to buy are Mexican drawn-work, sombreros, "rebosas" (highly colored cloths), ojillas, or water-jugs, seashells, coral, fans, etc.

From Acapulco to Salina Cruz the coast mountains are beautiful and grand. They come down close to the sea, and are piled range on range to the horizon.

The latter port (Salina Cruz) is the Pacific end of Tehuantepec isthmus, and is situated at the head of the gulf of the same name. Beginning at this point and going south, the high lands recede from the ocean to a distance of about thirty to forty miles, the country between being a jungle traversed by roads quite passable in the dry season, from December to May, but nearly an impassable swamp in the rainy season.

Twenty-four hours after leaving Salina Cruz we arrived off the last Mexican port, San Benito, and were called long before daylight for our first view of the Cordilleras, or Main Sierra,—and a wonderful sight it was. Here I should explain that in the tropics the best time of the year to view distant mountains is during the rainy season or for a month after the dry season begins, and the best hour of

the day is before sunrise, as after the sun is up the clouds immediately begin to cover the crests and soon after the entire mountains themselves. Toward the end of the dry season,—say from February to April,—the forest and prairie fires are so great that the entire ranges are obscured for several weeks at a time, the smoke being very dense.

My first view was on a beautifully clear morning as we lay at anchor about a mile from shore. The several volcanoes and high peaks were outlined with wonderful distinctness, and, though thirty to forty miles distant, they seemed close at hand,—Soconusco, 11,000 feet; Tacana, 12,000 feet; Tajumulco, 14,000 feet; Tumbador, 9,000 feet; Santa Maria, 12,000 feet; Zunil, 12,000 feet; and, last, the two grand peaks of Fuego (13,200 feet) and Agua (10,700 feet) that stand guard over the capital city of Guatemala. They were all extinct volcanoes, except Fuego, which smokes occasionally, and were all considered harmless until last September (1902), when Santa Maria unexpectedly burst forth and devastated the country for a radius of twenty miles around and killed several hundred natives. These volcanoes, going right up from sea-level to 14,000 feet high, and standing as sentinels guarding the interior plateaus behind them, are a wonderful sight. The coffee plantations are on the western slopes of this range, at an elevation of from 1,000 to 5,000 feet and a zone of about ten to fifteen miles wide; and I might here state that the three requisites for the successful growing of coffee are all found to perfection here on this Mexican and Guatemalan coast: 1st, an elevation of from 1,000 to 5,000 feet; 2d, a rainfall exceeding 300 inches annually; 3d, the thermometer never going down to the frost point.

At the next port, called Ocos, I landed, being lowered in a chair over the side and hoisted ashore in the same

manner, and, after a week's stay, enjoying several hunts and bagging a large variety of tropical birds, I made a three weeks' ride through the interior, passing over the main range at the San Marcos Pass, at an elevation of 9,000 feet, which, going from near sea-level to this height in one day's ride, seems like going over a much greater elevation. The change from tropic to temperate zone is also noted in the vegetation and atmosphere, and the view to the west from the top of the pass is inspiring. The ride is all on muleback up to and through the lowering clouds. A tropical storm of an hour's duration, with thunder, lightning, rain, and hail, the terrific violence of which can only be seen in the tropics, detained us in the shelter of a native hut; but it soon passed, and on we went.

I remember that storm particularly well, as there were several interesting incidents connected with it. As the storm gathered, we spurred our mules to shelter in a small native hut on the mountain, and as there were numbers of natives on the road, they also started for the same shelter. Among them was a traveling native opera troupe, or "marimba" party. This is the Guatemala national instrument, being a large xylophone played by four men. They also crowded into the hut, and the doors were then closed to keep out the pelting rain. As there were no windows, the interior was quite dark, being occasionally illuminated by vivid flashes of lightning, and the thunder nearly split the drums of our ears, as we were right in the heart of the storm on this mountain-top. To add to the din, the marimba party thought they would entertain the "estranjeros" with some heavy opera, and started their instrument which in the open air at one hundred yards distant is bearable, but in this ten-by-twenty-foot native hut, crowded in with some twenty persons, seated on the tables, beds, and floor, and with the storm raging outside, was certainly an "infernillo," which you can easily translate

means "little hell." It was with pleasure that we resumed our ride, and soon were up and above the storm-clouds, passing over the "siete vueltas," or seven turns, before reaching the top of the pass.

I have now in my mind the four most wonderful mountain panoramas that my limited experience has viewed—two in the tropics and two in our own country: 1st, the Yosemite and the Sierra from Glacier Point, early in April; 2d, the top of Marshall's Pass in Colorado, on the crest of the Rockies (being the old Rio Grande narrow-gauge route), in December, with a north wind and perfectly clear horizon; 3d, the crest of the San Marcos Pass, in Guatemala; and 4th, the Aguacarte Pass, in Costa Rica.

They each and all have their respective wonders.

After visiting the pueblos of San Marcos and Quezaltenango, the elevation of which is 8,500 and 7,800 feet respectively, I returned to the coast via the pueblos of San Felipe and Retalhuleu, the road passing under the shadow of Santa Maria,—in fact, winds down between the two volcanoes, Zunil on the south, and Santa Maria on the north of the road. The tops of these peaks, I remember, were covered with a heavy coat of frost which resembled snow. They are 12,000 feet elevation, and the snow-line in the tropics is 18,000 or 20,000 feet.

At Champerico we again embark, and the next morning arrive at San José, the principal port of Guatemala. This port is connected with the Capital by a railroad seventy-eight miles long, which winds around the spurs of the Agua volcano that towers 10,700 feet above it. These three volcanoes—Agua, 10,700 feet; Fuego, 13,200 feet; and Acatanango, 11,200 feet—are considered by travelers one of the most remarkable groups known, in that they are perfect cones, and go up without a break in their outline from practically sea-level. They are plainly visible from the seaport San José and for miles seaward. After

leaving Guatemala—in fact, while you are still at anchor, if the night is clear—the steamer's officers will show you a bright, peculiar-looking star near the southeastern horizon. This is the wonderful volcano Izalco, about fifteen miles back of the port of Acajutla. The mountain Izalco is only about 5,300 feet high, the active crater being on the western slope about 500 feet below the summit; but when this crater is in full eruption it is a most wonderful sight. There is not much steam or smoke, but the lava play is extraordinary. Stretched on a steamer-chair, the vessel at anchor about a mile from shore, with a good glass, I have watched the scene half the night through. The white-hot liquid seems to bubble up and over the edge of the crater in a stream one or two hundred yards wide and go rushing and rocketing down the side of the mountain a mile or two before it cools—the whole broad surface white and red-hot. You can plainly see the seething folds, like immense snakes, pushing and crawling down the side, or like an immense overboiling cauldron of metal from some Titan's foundry. If you are fortunate in a clear night, the sight is one you will not forget. I have again passed Acajutla and not even seen the foot-hills—the dry-season smoke has been so dense.

As stated before, all the lower Mexican coast from Salina Cruz to the Guatemala boundary is low and flat for about twenty miles inland from the ocean. This same formation extends all along the Guatemala coast-line, but at Salvador *terra firma* returns to the ocean beach, and the coast-line from here south to Panama is all high land. After leaving Acajutla, Salvador, and the wonderful Izalco, the next highest point is San Miguel Mountain, which stands by itself, at an elevation of about 7,000 feet, near the north entrance to the beautiful Gulf of Fonseca. As you cruise up this beautiful sheet of tropical water on your way to the ports of La Union, Salvador, and Ama-

pala, Honduras, you are reminded that you can see the three republics—Salvador, Honduras, and Nicaragua—all at the same time. The mountains are all around us as we sail up the gulf, but nowhere over 2,000 or 3,000 feet high, except in the distant interior.

At our next stop,—Corinto, Nicaragua,—is another line of volcanic peaks,—Viejo, Chinandega, Leon, and old faithful Momotombo. These stretch out in a line off to the southeast, but are not as high or imposing as those in Guatemala.

A half a day's ride in the Nicaragua Central Railroad from the port lands the traveler at the smaller of the Nicaragua lakes, called Managua, and here is situated old faithful Momotombo, which juts out into the lake, a perfect cone. This volcano has the reputation of forever blowing off, and it is a beautiful sight—a long banner of steam or white smoke, seemingly always of the same volume or density, continually can be seen stretched from the summit.

This volcano does not discharge lava, pumice, sand, or black smoke, but always this white banner. At its foot in Lake Managua is a volcanic cone called Momotombita, which is extinct. After crossing the lake you arrive at the capital city, Managua. In the foot-hills back of the city are several crater lakes,—that is, volcanic craters that have been filled with water by the heavy tropical rains.

The train then carries you across to Granada, which pueblo is situated on Lake Nicaragua. On the way you pass the volcano of Masaya, an extinct crater.

In Lake Nicaragua is a volcanic island. The cone, rising out of the lake to the height of 5,747 feet, is called Ometepe, and is just on the line of the proposed canal. I have seen its summit from the steamer-deck when sailing along the Pacific off the port of San Juan del Sur. This cone gives off smoke and vapor occasionally, but is not

active. Personally, I have always been in favor of Panama as the route for the interoceanic canal as against Nicaragua, as, besides the unknown difficulties of the San Juan River valley, the elevation of Nicaragua Lake is 120 feet above the ocean-level. I have always thought the seismic disturbances resultant from the proximity of these large volcanoes more than offset any difficulties at Panama. If the Nicaragua route was chosen, it would be quite up to the Central American way of procedure for Uncle Sam to have his finest warship in the locks crossing from Brito to La Virgen (the western end of the canal) and a good strong earthquake in a moment wreck a million-dollar lock, a three-million-dollar battleship, and ruin the canal; but I hope we will never see it. Excuse this divergence from my subject, as I must hurry on my route.

After leaving Nicaragua, you see considerable high country, as this part of the continent, Honduras and north-eastern Nicaragua, have been called one of the most mountainous countries for their area on the globe. It seems as if they were jammed together from each side and turned up edgeways at all sorts of conceivable angles.

Our last port on the coast is Punta Arenas, beautifully situated near the head of the picturesque Gulf of Nicoya. A train takes you about twenty miles into the foot-hills, and from there the journey into the interior is made by mule—the distance is fifteen leagues, or eighty kilometers, both of which measures are used in these countries. The old natives alway speak of a league (three miles), while the signposts are all in kilometers. The whole of this road is staked off with signposts made of a ten-foot piece of railroad track with a cast-iron sign, showing the number of kilometers you have come and how many you have before you. Here you are ascending the western slope of the Aguacarte Pass, with the gulf and ocean to the west of you and mountains all around.

The elevation does not amount to much,—about 4,000 feet,—but you go right up from sea-level, and it seems much higher than it really is.

The view from the summit is very extensive and grand,—practically, the whole of Costa Rica stretches before you. It is one high plateau or valley surrounded by peaks. There are but three prominent volcanoes here,—Poas, 8,692 feet; Irazu, 11,200 feet; and Turrialba, 11,000 feet,—none of which are violently active, just occasional steam and vapor passing from their craters.

Irazu, which is situated about midway across the continent, possesses the proud distinction of being the only place where the two oceans, the Atlantic and Pacific, can be seen at one time. This is a fact, but not one party in a dozen that make the ascent ever sees either ocean, as it is nearly always cloudy either one side or the other. In the month of April, however, just after the first rain of the season, you have a fair chance of obtaining the coveted view.

The pueblo of Cartago, which is on the railroad which runs from the capital, San José, to the Atlantic port called Limon, passes just under Irazu, and I have had an afternoon's scramble up the peak, but did not attempt the summit, as it was fog-covered.

This about covers all the high peaks and volcanoes on the coast north of Panama, and a traveler will see much more of them than of the greater elevations of the Andes, as they are so far back from the coast that you might take the entire trip to Valparaiso without seeing one of them.

A captain of the P. S. N. Co. who has sailed on the coast twenty years has never even seen Chimborazo, which is just back of Guayaquil, in Ecuador.

After you leave Costa Rica, your next and last stop is Panama. The position of Panama reminds me of what you might call a geographical joke. A naval officer told

it to me, and I have caught two Pacific Mail captains on it. If you remember, Panama is on the Pacific, the west side of the isthmus, and Colon on the Atlantic, the distance across being thirty-eight miles. The question is how far east of Panama is Colon, the natural answer being about thirty-odd miles. Make a wager on it and see how easily you will win. If you examine your atlas carefully you will see that the isthmus, instead of running north and south, forms a letter S, and the Panama railroad runs northwest and southeast, and that Panama on the Pacific is about seven miles east of Colon on the Atlantic.

I have nearly forgotten my souvenirs. In Guatemala are colored cloths and silver-work; in Nicaragua, hammocks and carved white gourds and black carved coconuts, called "juacales" and "jicaros"; in Costa Rica, silver-work souvenir spoons and Panama hats that I have bought for four silver dollars there, and when the rage was on here for this fashion have been asked in San Francisco forty dollars gold for nearly the same hat.

If any of the Sierra Club wish a good two months' loafing trip, I can recommend from here to Panama and return, during December or January; but you want a pleasant party, and you will be glad when you sight the Golden Gate.

SAN FRANCISCO, April 2, 1903.

RALPH SIDNEY SMITH.

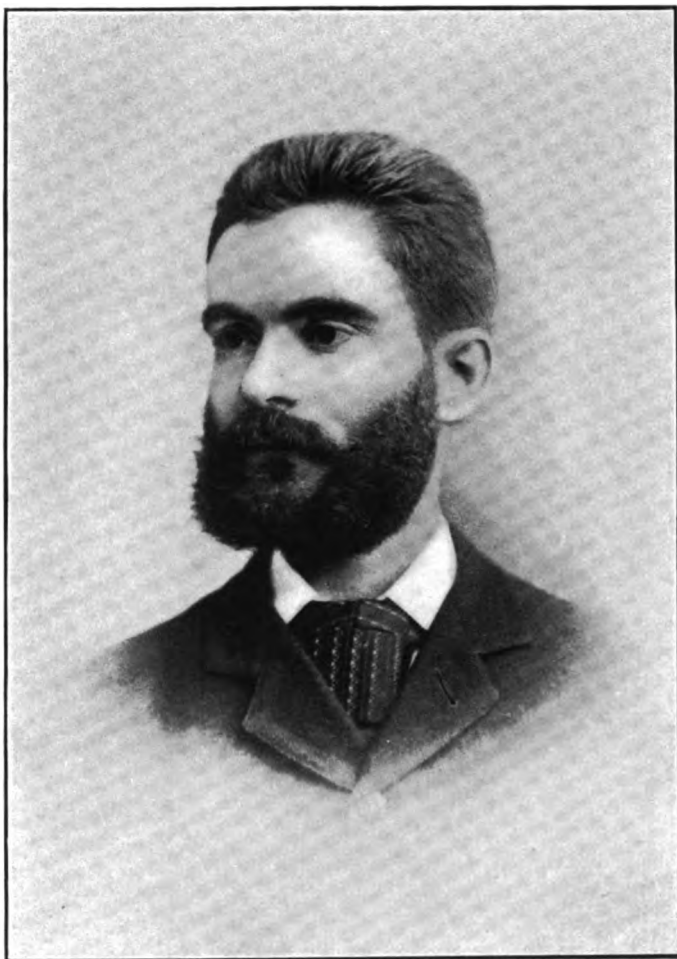
BY WILLIAM A. BREWER.

Ralph Smith was a man of letters, a traveler, a lover of out-of-doors, a poet. As a writer of no mean ability, whose facile pen pictured enchantingly the glories of our California forests and mountains, he would deserve honorable mention in these pages. But we place this brief story of his life in the archives of the Sierra Club for a better and a stronger reason. For it was Ralph Smith who first conceived the plan of establishing a forest reservation in the Big Basin country.

Few of us realize as yet what it will mean to have one of the most beautiful untamed parks in all the world, unique in the character of its forests,—nay, of its very rocks,—lying at the door of a great city, its mountain slopes visible from our windows. But Ralph Smith the poet dreamed of this years ago, and Ralph Smith the skillful editor and intelligent man of affairs set about to bring into actual existence what then seemed but the figment of his imagination.

His whole life appears to have been but the preparation for the accomplishment of this one purpose. His boyhood and school-days were spent in San Mateo County, and as a youth he rambled through the Santa Cruz Mountains and fished along the Pescadero, the Purissima, and the San Lorenzo.

For a time he tarried in San Francisco, writing abundantly and promisingly for the daily newspapers and for the weekly and monthly magazines. In 1880 he was



RALPH SIDNEY SMITH.

Born October 3, 1852. Died November 29, 1887.

assistant editor of *The Argonaut*. Then he wandered far afield, under a commission given him by the United States government, to gather information relating to the industries and flora of the Pacific Coast. His duties took him to Oregon and Washington Territory, and his work was so well done that he was offered a permanent position at the nation's capital. But when the offer came he was traveling in Mexico, his many articles descriptive of that country appearing in the *San Francisco Bulletin*. Upon his return he was appointed secretary of the Golden Gate Park Commission, and in 1883 he sailed for Honolulu, to take charge of *The Saturday Press*. His editorial administration of that paper was vigorous and successful, and his reputation as a writer was so well established that no less a person than George Augustus Sala urged him to go to London, as he believed that his talents should have a wider field.

But the love of his native mountains and cañons proved the stronger attraction, and in 1885 we find him returning with his family to San Mateo County, this time as editor of the *Redwood City Times and Gazette*. During all these years he had remembered the forests and streams of the Santa Cruz Mountains. Indeed, so far back as 1877 he had written an article urging the preservation of the redwoods there, and suggesting forest reservation as a practicable method of accomplishing this object. But now, as editor of the *Times and Gazette*, the project took immediate and definite shape in his mind. The first gun in his campaign was an open letter, published in the issue of his paper for December 4, 1886, and addressed to Messrs. Leland Stanford, Charles N. Felton, James D. Byrnes, James L. Flood, Frank G. Newlands, Antoine Borel, and others, urging the prevention of timber-cutting and the establishment of a forest reservation, state park, or other tract for public benefit in the

Santa Cruz Range. He at first suggested the Pescadero and Butano cañons as its site, as being easy of access, of unique beauty, and in few hands. But he did not insist upon the choice of any definite site, and on January 1, 1887, he wrote, "So far as immediate availability is concerned, the 'Big Basin' of the three-pronged Waddell Creek, in the northern part of Santa Cruz County, is fully the equal of the location proposed by us. The rugged grandeur of its hills, the dense growth and size of its forests, equal anything in this county. San Mateo County will not complain if the 'Big Basin' be selected for the site."

During the succeeding months the project achieved the widest publicity. *Harper's Weekly*, the *New York Tribune*, and other eastern journals commended it, and on the Pacific Coast prominent men and the entire press of the State gave it hearty encouragement. Not the least potent factor in arousing interest was Mr. Smith's pamphlet, entitled "An Appeal to the Enlightened Self-Interest of California."

But Ralph Smith's life was rapidly approaching its sudden and tragic end. Within ten days of his death he took a party of gentlemen, comprising the State Board of Forestry, on a trip into the very heart of the redwood region in Santa Cruz County. Then, on November 29, 1887, unarmed, he was shot to death on the streets of Redwood City by one whose name shall not be written here.

The life of this gentle, generous-hearted man, who loved all the world, and whom all the world loved in return, was unfinished, incomplete. But his life work was done, and nobly done, though he knew it not. "It is a big scheme," he wrote, not long before his death, "Yes. But it is a perfectly practicable scheme, and, if it is carried out, he who makes this public suggestion will

have done the worthiest and most satisfactory act of his life."

It is not surprising that many have made the suggestion that his name shall, in some manner, be associated with the California Redwood Park. All true Sierrans will respond to these words of Mr. J. V. Swift, who worked beside him during the years preceding his death: "In that grand and noble forest that will form a priceless heritage to future generations, is there not one spot or tree that may be named in his memory—some simple tribute to be found in recognition of his generous efforts in behalf of those stately redwoods? Marble or brass could not more fittingly tell of his virtues than the musical murmur of the brooks, the melody of the song-birds, the fragrance of the flowers, and the perennial verdure of the majestic giants of the mountain. Nature has provided his monument. May it serve to keep green his memory."

CLIMBING MT. BREWER—THE CLIMAX OF THE SIERRA CLUB'S OUTING FOR 1902.

BY EDWARD T. PARSONS.

Many interesting stories have been told of the second annual outing of the Sierra Club in the King's River Cañon and the alpine region at its head. The great "hike" in from Millwood of the large party with their train of pack-horses, the side-trips to Paradise Cañon, to Bryanthus Lake, to Lake Charlotte, and to Kearsarge Pass; the trout-fishing in King's River and its tributaries, in Lake Charlotte and Bryanthus Lake; the ascents of Goat Mountain, of Mt. Rixford, of Sentinel Peak, of Avalanche Peak, of Mt. Gould, of University Peak,—all of these were full of incident and delightful interest to the participants.

Then there was the less strenuous side of camp life in the main camp in the cañon, Camp Colby. Its afternoon teas, the songs, stories, and lectures of the evening camp-fires, the frolic of care-free life in the mountains, with the intoxication of the pure mountain atmosphere and the inspiration of the merry glances of bright eyes,—altogether these were experiences that will make this outing a life-long recollection to the Sierran excursionists, and which have been described by Miss Sanderson in a preceeding BULLETIN.

But of all the doings, grave or gay, that filled up this merry month in the Sierra, the most notable and hazardous by far was the ascent of Mt. Brewer. Only a week before, Walter Ray, a young man who was spending his summer in the cañon, joined three other young men, who were camped near him, on a climb to Brewer's summit,



PLATE LXXX.



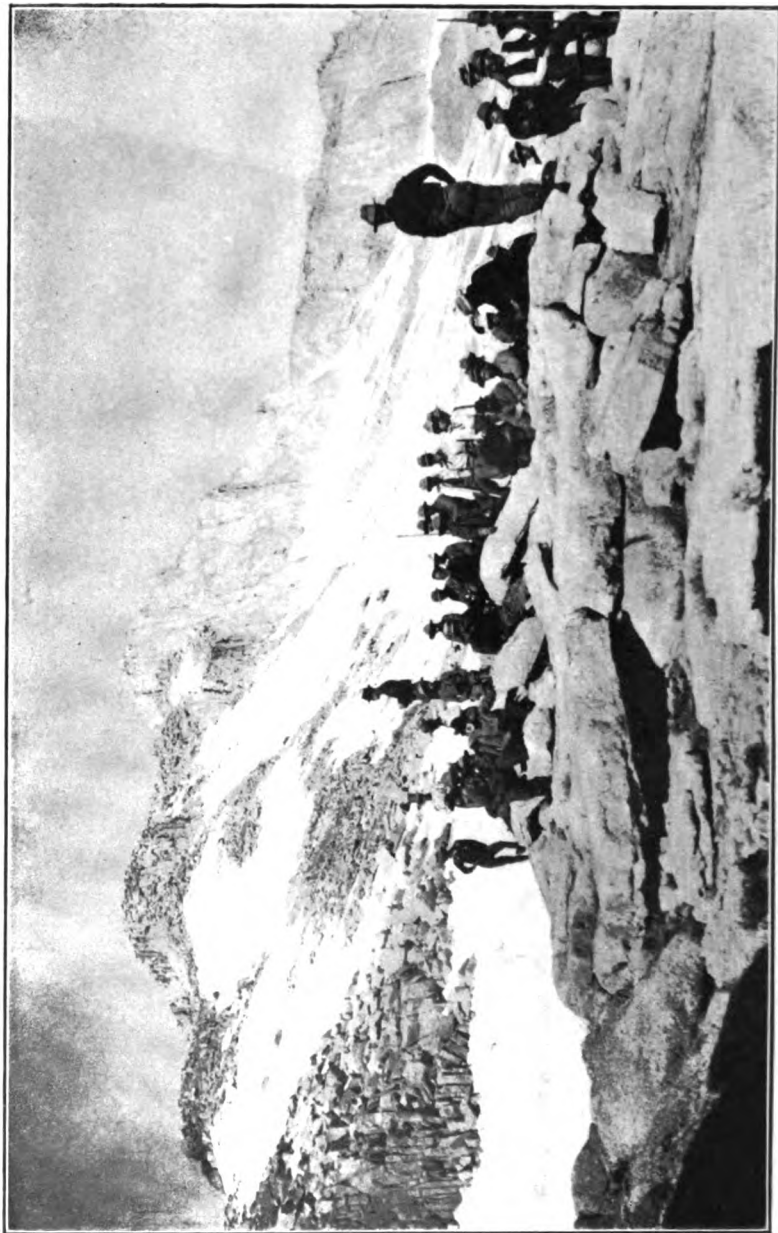
and venturing too near a rock cornice cresting a precipice of over five hundred feet sheer descent, not far from the top of the mountain, he started a loose boulder and went with it down to instant death far below. Neither he nor the three young men who climbed with him were members of the Sierra Club party. Nevertheless, his tragic death grieved the Sierrans, and necessarily added to the feeling of responsibility with which the committee made their preparations for this difficult climb.

In order to avoid including any incompetent climber, who might delay the line and mar the success of the climb, it was decided to take only those who had a mountaineering record for high climbing, together with those others who might qualify by climbing in one day from Camp Colby to the saddle on the way to Goat Mountain, which saddle was at an elevation of about 11,000 feet, a rise of 5,800 feet from the floor of the valley at Camp Colby. While there was some little disappointment on the part of a few without mountaineering records, and who neglected to qualify on the Goat Mountain climb, the committee was justified in its judgment as to requirements for the Brewer trip by the fact that two experienced climbers, with ample records, but a little out of condition the day of the climb, failed to reach Brewer's summit. Another requirement was, that no skirts were to be worn by the ladies during the climb. The precipice of loose broken rocks forming the approach to the summit made this requirement a necessary precaution against the danger to those following of loosening and starting rocks down the slope. Complying with these requirements, forty-nine enrolled for Brewer, including seventeen ladies, whose costumes of bloomers, overalls, or knickerbockers were not only appropriate for the work to be accomplished, but lessened the fatigue of climbing, thus enhancing their chances of reaching the summit.

The trip to Brewer was to be included in a week's absence from Camp Colby, during which the party intended to visit Charlotte and Bryanthus lakes and Kearsarge Pass. Ninety pedestrians, including the party of forty-nine for Brewer, started from Camp Colby on Sunday morning, July 7th, going by the way of Bubb's Creek to the junction meadow. Up the floor of the valley the trail led beside the beautiful King's River, through picturesque openings and dense forests, of which the noble sugar-pines and sturdy yellow pines were the stateliest, the cedar and silver firs giving gracefulness and variety to the landscape. Leaving the main floor of the cañon at the delta of Bubb's Creek, the trail zigzagged up a very steep bluff, and in many places was extremely hazardous for horses, as our packers lost two over the precipice in getting our baggage to our next camp. This trail, however, was repaired by the Government forest rangers, and was in good condition before our return from this trip to Camp Colby, a week later.

Through Charlotte Meadows, beside the leaping, cascading stream, threading beautiful opens and fine timber patches, we finally arrived at the spot selected, and went into camp a little below the mouth of Eastlake Creek, naming the location Camp Miller. Here the others of the party fished, cooked, rested, and enjoyed the beauty of their magnificent surroundings while the mountaineers were on the Brewer expedition.

Monday morning the Brewer contingent, accompanied by several of the remainder of the party, proceeded up Eastlake Creek to the lake, and around it to the upper end, where they made camp in a fine grove of pines. To this spot was given the name of Camp Le Conte. Here we met with a vociferous welcome on the part of a numerous colony of Clark crows, who discussed us from all stand-points and asked all sorts of questions as only vivacious



BREATHING SPELL.—ON THE CLIMB OF MT. BREWER

From a photograph by E. T. Parsons

birds can. Here, too, we were delighted by the sight of numerous water-ousels, who make their habitat about the inlet of the lake, near the leaping, tossing waters of which we fixed our camp, while from their homes in the rocks on the east side of the lake the mountain marmots viewed us from a distance with questioning interest, and shrilly whistled their disapproval of our nearer approach.

Nearly all of the party went that afternoon to visit and view Reflection Lake, one and a half miles further up at the base of Crag Reflection, where it mirrored the grandeur and magnificence of its alpine surroundings, a veritable sapphire in its setting of rock and snow-flecked cliff. Meanwhile two or three of the old-timers rolled up in their blankets, and by an hour or two of sleep that afternoon conserved and stored up increased energy for the next day's struggle.

That evening the camp-fire exercises were brief. The party lined up for inspection, and numbered forty-nine. Shoes were carefully examined, and good-night was spoken at 8:30, in view of the early start of the morrow.

Bugle-call sounded at 4 o'clock in the morning; breakfast was ready at 5, and before 6 o'clock the line was formed and numbered. Instructions were given to keep places in line throughout the climb, to heed carefully, promptly, and without question the directions of the leaders, and off we started. Mr. Le Conte, of the Outing Committee, was leader and guide of the trip, and Mrs. Le Conte pacemaker. Soon a Government forest ranger joined the party, making a total of fifty.

Slowly we made our way up out of the Eastlake basin, with frequent short halts to enjoy and admire the magnificence of the views as they unfolded before us. We were now passing over solid granite, its rough surface, seamed and broken and dotted with huge boulders, and in spots showing glacial polishings. Here and there were small

grassy meadows and rivulets, bordered with willow and edged with heather, while, wherever a foothold was possible, the *Pinus albicaulus* struggled for existence. Soon, beyond the limit of timber growth, we found only the scattering alpine flowers to relieve and beautify the harshness of granite and snow-field. We passed several small glacial lakes, deepest blue in their snowy basins, behind the terminal moraines of now almost extinct glaciers.

From the beauties at our feet our attention was called to distant snow-capped ranges of the High Sierra, their lofty peaks glowing in the glorious lighting of that magnificent Sierra morning. Our hearts were filled with the ecstasy which only mountaineers can feel, and which is only to be enjoyed in high places, and earned by the arduous efforts necessary to attain such surroundings.

All of the party were in the best of spirits. Well conditioned by wise precaution and careful preparation, they were keen to appreciate and enjoy the glorious opportunities of the climb. None was yet fatigued, so well ordered was the pace set and so well timed the frequent short rests. As our aneroid barometer indicated the altitudes of 10,000 feet, 11,000 feet, 12,000 feet, it was so announced. We were progressing up the northeast spur of the mountain.

Finally to bare granite and small snow-patches succeeded loosely piled rock ledges and several large snow-fields. The sun was now so high that these snow-fields were softened, so that footholds were very insecure, and constant breaking through the crust of the surface was extremely fatiguing. On the last large field below the extreme dangers of the approach to the summit, the altitude and the exertions of crossing these snow-fields had so accelerated the heart action of two of the party that it was deemed wise for them to go no further, and another one of the party remained with them. While we all regretted that they did not register with us at the peak, it is the



LAKES.



STANCE.

policy of the club to discourage too severe exertions that might result in any permanent disability. The final 1,000 feet of altitude to the summit was made very slowly and carefully. The leaders guided the way, removing where possible loose and threatening rocks and picking footholds and handholds for those following. Especially did the leaders closely watch and warn the party past the loose-rock cornice over which young Ray went to his death. While appearing perfectly safe to the inexperienced, it was necessary to keep away from the edge where the loosely piled rocks only awaited a slight encouragement to leap 500 feet in the clear to the rocks below or into the great Bergschrund that yawned near the top of the glacial snow-field on the north side of Brewer.

A little further on, the crest of the spur along which we traveled narrowed to about fifteen feet in width, covered with a small snow-field, which extended in a snow cornice on the north side over another precipice of about six hundred feet. Here again the climbers were carefully led, lest they loosen this cornice and go with it to icy death below, where, if not killed in the fall, they must have been engulfed in the Bergschrund.

Then followed a steep climb in loose rocks to the summit, 13,886 feet above the level of the sea, where, thanks to their ready acquiescence in all the directions of the leader and the good discipline maintained by the party, all arrived safely and in buoyant good spirits before 11:30 o'clock.

Many of the sturdier climbers could have made the ascent in two hours' less time, but cheerfully slowed down to the pace set, and by their sprightly conversation and genial badinage encouraged the slower ones, the beginners, beguiling them out of fatigue and adding greatly to the total of pleasure of the trip. For it was not desired or intended to break the record in the time made to the

summit, but rather to excel all previous Sierran climbs in the number of the party safely and enjoyably led to a High Sierran summit. Soon we composed ourselves to enjoy the marvelous panorama surrounding us; field-glass and cameras were brought into play, but no photograph could give the coloring and atmosphere of the matchless views from Brewer's summit. Slightly apart from the main ranges we were treated to a sight of peak after peak, rugged and snow-capped, time-defying pinnacles in a region of grandeur. Far to the southeast we looked upon the "top of the United States," the summit of Mt. Whitney, 14,522 feet altitude, the loftiest peak in the republic.

It was difficult to single out the highest points among the spires and pinnacles, seemingly the well-buttressed pillars supporting the blue arch of heaven. Its azure depths were softened and toned by the snowy frescoes of the ever-varying and changing fleecy clouds that circled and played about us, culminating in a storm far to the northward on Goat Mountain.

Sobered by the austere grandeur of the scene, we quietly withdrew in detached groups and slowly made our way from the awe-inspiring spot. Then more swiftly, over rocky spur, and coasting across and down the snow-fields, we hastened to Eastlake Basin and down East Creek Cañon toward Camp Miller, where the remainder of the Kearsarge Pass party welcomed us to a hospitable and satisfying trout dinner at 6 o'clock. There would be as many and as various stories of the summer as the number of the Sierrans who enjoyed this summer's outing, but certainly the Brewerites would agree on this, that the most delightful and memorable day of the entire trip for them was that spent in conquering and surmounting Brewer.

TABLE OF ELEVATIONS OF PEAKS IN THE
SIERRA NEVADA MOUNTAINS OVER
12,000 FEET ABOVE SEA-LEVEL.

BY J. N. LE CONTE.

Among the several Tables of Elevations of California localities which have appeared, none gives our State her fair share of high peaks. In the "Dictionary of Altitudes in the United States," published by the U. S. Geological Survey,* there are but fifteen peaks in the Sierra Nevada given as 12,000 or over. In Wheeler's "Surveys West of the 100th Meridian,"† there are less than twenty, while in our own publication‡ there are but eight. The reason of this is of course evident. It is not because a greater number of high peaks does not exist, but that the southern Sierra, where the greater number is to be found, has not as yet been accurately surveyed. The U. S. Geological Survey is extending its topographic work southward, and is only now beginning to cover this territory, having completed but one sheet (the Mt. Lyell quadrangle) where the higher elevations begin to appear on the Main Crest. Furthermore, in some lists of elevations figures are given which have long since been replaced by more accurate ones, and even different elevations are given for different names of the same peak.

It is with the idea of giving a fuller conception of the number as well as of the distribution of the High Sierra peaks that the following list is offered. The same diffi-

* See "Bulletin of the United States Geological Survey, No. 160: Dictionary of Altitudes in the United States. (Third Edition.) Gannett. 1899."

† See "United States Geographical Surveys West of the 100th Meridian: Tables of Geographic Positions, Azimuths, Distances, etc. Capt. Geo. M. Wheeler, in charge; Lieut. M. M. Macomb, Assistant. 1885."

‡ Sierra Club Publication No. 8: "Table of Elevations within the Pacific Coast. Mark Kerr and R. H. Chapman. 1893."

culty has been encountered in making it up,—namely, the impossibility of obtaining accurate measures in the southern portion; therefore, many of these latter are merely estimated, but undoubtedly a carefully estimated elevation is better than none at all.

The peaks are arranged according to latitude, as such gives an idea of their distribution along the range, while the advantages of an alphabetical arrangement are small in so short a list. The first column gives the commonly accepted name of the peak, the second the latitude, the third the longitude, and the fourth the elevation above sea-level. The fifth column gives the authority for the elevation, while the sixth gives the means by which it was obtained, and the last is the river basin in which the peak stands. The latitude, longitude, and elevation when in black-type letters, are taken from well-established data, usually from Wheeler or from the U. S. Geological Survey. In these cases the two former are written to single seconds of arc, and the latter to single feet. Where not in black type, the latitudes and longitudes are merely scaled off to the nearest ten seconds from existing maps, and the altitudes are taken either from the nearest contour of maps, from aneroid-barometer readings above a fairly well-established base, or by simple estimation. The abbreviation "U. S. G. S." stands for U. S. Geological Survey, and "U. S. C. & G. S." for U. S. Coast and Geodetic Survey. Those elevations credited to Whitney are from the reports of the California State Geological Survey.* The elevations by Captain Geo. M. Wheeler are among the very best. Nearly all the exact latitudes and longitudes as given are from his work, and the only accurate elevations in the southern Sierra are his. In the sixth column, B means that the height has been determined by a cistern barometer; T, by triangulation; A, by the aid of an aneroid; and those designated by E are simply estimated. Of these different methods, that by triangulation is the

* See "Reports of the California Geological Survey." Vol. I, Geology. Prof. J. D. Whitney.

best, and that by cistern barometer is the next. A single aneroid reading is by itself of no practical value; but when compared shortly before or after with a fairly well-established base, it is at least an aid to a mere estimation. The estimated heights are all obtained through a study of photographs from, and with reference to, fairly well-established points. In the last column, "Tuol." stands for the basin, or drainage area, of the Tuolumne River (not the county), "M. C." for the Main Crest, or hydrographic divide, "S. J." for the basin of the San Joaquin River, and "Mer." for that of the Merced.

In glancing over the list, a few points will bear further discussion. Mt. Shasta can scarcely be considered as a Sierra peak proper, and is in a class by itself. Passing south from Shasta, the first peak which rises over 12,000 feet is the Matterhorn, or Castle Peak, at the head of Return Creek, a tributary of the Tuolumne. A short distance south of this is Mt. Conness, a primary triangulation station of the Coast Survey, and the most accurately determined point that we have. At Mt. Ritter, in lat. $37^{\circ} 41'$, there comes the first culmination of the Sierra, and beyond this southerly there is a break of over twenty-two miles to Red Slate Peak, where the crest again rises to approximately the same elevation. In this break is the remarkable Mammoth Pass, only 9,300 feet. In the neighborhood of Mt. Abbott there are a number of very fine peaks, none of which have been ascended, except Mt. Morgan, which was occupied by the Wheeler Survey as a triangulation-point. The name Abbott was given by this party to what is probably Gabb, and this change has been made in the list.

The first point reaching 14,000 feet is certainly Mt. Humphreys. Its position is accurately given by Captain Wheeler, but unfortunately its elevation was not taken. Nine miles south of this is Mt. Darwin, even higher than Humphreys. It is a most conspicuous point, not only from the San Joaquin basin, but also from the whole of the King's River basin, towering as it does high above

the Goddard Divide. The elevation of Mt. Goddard, and those of the neighboring peaks, are the most uncertain of the whole list. They are so far from other well-established points that close estimation is almost impossible. My aneroid gave 13,550 feet on the summit, but I am reasonably sure that it was reading low on that day. The elevation that I have given it is 13,600, but that is to be taken as rather below than above the true height. Mt. Jordan and Split Mountain, called by Wheeler the "N. W. and S. E. Palisades," are well-established points, and among the highest in the range. The former is one of the most magnificent mountains in the Sierra, which seems to culminate in ruggedness in this region. The only 14,000-foot point between the latter and the King's-Kern Divide is Mt. Pinchot, a stupendous mass of red slate on the Main Crest at the head-waters of Wood's Creek. It was first called Red Mountain by Professor Brown, of Palo Alto, but such a name is unsuitable, as all the slate peaks of the Sierra are red, and the name has been applied to a half-dozen other points.

At Mt. Whitney the range culminates in elevation. The most singular confusion has existed, and still exists, concerning the height, position, and name of this mountain. As it is the highest within the borders of the State, and higher than any in the Rockies, it deserves more than a passing mention. It was apparently first seen from the west, and its great height appreciated, by members of the State Geological Survey in 1864 from the summit of Mt. Brewer. A few days later it was seen, and named, from the summit of Mt. Tyndall, by Clarence King of the same party. In attempting to ascend it from the Owen's Valley in 1871, Mr. King, according to his own version,* mistook the right point, and climbed the peak given as Mt. Corcoran in the list. This latter could not have been the one previously named by him, as it is not visible from the summit of Tyndall. Clouds prevented his seeing the true summit; and later, in 1873, Mr. W. A. Goodyear ascended

* See "Mountaineering in the Sierra Nevada." By Clarence King.

Mt. Corcoran, with the assistance of a mule, found King's record, and first made known the fact that this was not the highest point,—viz., Mt. Whitney. On August 18, 1873, John Lucas, C. D. Bengole, and A. H. Johnson, ascended the true peak, and finding on its summit no record of a previous ascent, called it Fisherman's Peak. On September 6, 1873, Carl Rabe, of the California Geological Survey, together with four others, ascended the peak, and took cistern-barometer readings on its summit, the first measurement ever made. On September 19th of the same year, Clarence King ascended it, and made a barometric measurement. From the preceding it appears that Mt. Whitney and the so-called Fisherman's Peak are one and the same point, and not distinct points as given in certain tables of elevations.

As to the elevation of the peak, the following items may be of interest. Mr. Carl Rabe, who made the first measurement, was, until 1891, employed at the Students' Observatory of the State University. He often showed me the mountain barometer with which he made the observation, and also the readings themselves, written on the wooden case. This barometer is still at the observatory, and I have the readings before me.* The elevation, as worked out by the members of the survey from these readings, was 14,898 feet. This is obviously an impossible result, as such an elevation, if obtained from such readings, would have required a barometer of 31.50 inches at the sea-level, even with the most favorable temperature conditions there. The elevation must have been incorrectly worked up, and can therefore be safely rejected, though it has appeared in geographies and encyclopedias the world over, and is still used. King gives his measurement as 14,887, but he depended for his base on distant points, and the measurement is certainly much too high.

The best measurements are those of Wheeler in 1875,

* They are as follows:— $h' = 17.836$ $t' = 33^{\circ}$
 $h' = 17.848$ $t' = 42^{\circ}$

and Langley in 1881. Wheeler makes the height by barometer to be 14,471, and by triangulation to be 14,470 feet. These figures depend upon the elevation of Camp Independence, which was fixed by a long series of barometric observations in 1871 and 1875. Langley's determination is by barometer and triangulation also, and places the summit at 14,522 feet. This is dependent on the railroad levels at Lone Pine Station, and appears to be the most trustworthy figure.

**LIST OF PEAKS IN THE SIERRA NEVADA OVER 12,000 FEET
IN ELEVATION.**

NAME.	Latitude.	Longitude.	Elevation.	Authority.	River Basin
	° ' "	° ' "			
Shasta	41 24 28	122 11 43	{ 14,380 14,360 14,440	{ U.S.G.S.... Davidson.. Whitney...	{ T } McCloud- B } Klamath
Matterhorn	38 05 25	119 22 44	12,260	Wheeler...	T Tuol.-M.C.
Dunderberg	38 03 43	119 16 17	12,289	Wheeler...	T Tuol.-M.C.
Warren	37 59 20	119 13 30	12,337	U.S.G.S....	T Mono.
Conness, N.Pk....	37 58 50	119 19 00	12,256	U.S.G.S....	T Tuol.-M.C.
Conness	37 57 51	119 19 06	{ 12,585 12,556 12,552	{ U.S.C.&G.S. U.S.G.S.... Wheeler...	{ T } Tuol.-M.C.
Dana	37 53 49	119 13 05	13,050	U.S.G.S....	T Tuol.-M.C.
Gibbs	37 52 30	119 12 40	12,700	U.S.G.S....	T Tuol.-M.C.
Kuna Crest	37 51 50	119 15 50	12,225	U.S.G.S....	T Tuol.
Koip Pk.....	37 48 40	119 12 10	13,010	U.S.G.S....	T Tuol.-M.C.
Parker Pk.	37 48 40	119 11 00	12,850	U.S.G.S....	T Mono.
Kuna Pk.	37 48 40	119 12 40	12,951	U.S.G.S....	T Tuol.-M.C.
Wood	37 48 20	119 09 50	12,663	U.S.G.S....	T Mono.
Blacktop	37 47 40	119 12 10	12,723	U.S.G.S....	T Tuol.-M.C.
Donohue Pk.	37 46 20	119 13 00	12,073	U.S.G.S....	T Tuol.-M.C.
McClure	37 44 30	119 16 50	13,000	U.S.G.S....	T Tuol.-Merced
Florence	37 44 20	119 19 00	12,507	U.S.G.S....	T Merced.
Lyell	37 44 11	119 16 07	13,090	U.S.G.S....	T Tuol.-Mer.-M.
Rodgers Pk.	37 43 30	119 15 30	13,036	U.S.G.S....	T Mer.-S.J.-M.C.
Davis	37 42 50	119 13 10	12,308	U.S.G.S....	T S.J.-M.C.
Electra	37 42 10	119 15 40	12,462	U.S.G.S....	T Merced-S.J.
Banner Pk.	37 41 40	119 11 40	12,957	U.S.G.S....	T S.J.
Foerster Pk.	37 41 20	119 17 30	12,062	U.S.G.S....	T Merced-S.J.
Ritter	37 41 10	119 11 49	13,156	U.S.G.S....	T S.J.
Minarets	37 39 20	119 10 40	12,278	Wheeler...	T S.J.
Red Slate Pk....	37 30 16	118 51 58	13,067	Wheeler...	T S.J.-M.C.
Red-and-White Pk.	37 28 20	118 51 10	12,900	.....	E S.J.-M.C.
Morgan	37 24 07	118 43 47	13,791	Wheeler...	T Owens.
Abbot	37 23 00	118 47 00	13,700	.....	E S.J.-M.C.
Gabb	37 22 25	118 47 58	13,582	Wheeler...	T S.J.
Bear Creek Spire	37 22 00	118 45 50	13,600	... ..	E S.J.-M.C.

NAME.	Latitude.	Longitude.	Elevation.	Authority.	River Basins.
° ' "	° ' "	° ' "			
Hilgard	37 21 20	118 49 26	13,000	.....	E S.J.
Seven Gables	37 18 40	118 49 50	13,100	LeConte...	A S.J.
Humphreys	37 16 02	118 40 11	14,000	.....	E S.J.-M.C.
Darwin	37 10 10	118 40 10	14,100	.....	E S.J.-M.C.
Haeckel	37 09 30	118 39 10	13,900	.....	E S.J.-M.C.
Spencer	37 09 20	118 40 30	12,800	.....	E S.J.
Wallace	37 09 10	118 38 50	13,800	.....	E S.J.-M.C.
Fiske	37 08 40	118 39 00	13,700	.....	E S.J.-Kings.
Dusy Pk.	37 06 30	118 31 40	14,000	.....	E Kings-M.C.
Goddard	37 06 10	118 43 00	13,600	LeConte...	A S.J.-Kings.
Agassiz Needle ..	37 06 10	118 31 20	13,800	.....	E Kings-M.C.
Sill	37 05 30	118 30 00	14,150	.....	E Kings-M.C.
Jordan (N. Palisade).	37 05 27	118 30 40	14,275	Wheeler...	T Kings-M.C.
Charybdis	37 05 10	118 40 00	13,800	.....	E Kings.
Scylla	37 04 40	118 41 10	13,800	.....	E Kings.
Middle Palisade..	37 04 00	118 27 50	14,000	.....	E Kings-M.C.
Devil's Crags ...	37 02 00	118 36 30	12,900	.....	E Kings.
Blue Cañon Pk...	37 01 40	118 43 40	13,000	.....	E Kings.
Woodworth	37 01 20	118 36 50	12,350	LeConte...	A Kings.
Panorama Pt. ...	37 01 10	118 31 10	12,500	LeConte...	A Kings.
Split (S. Palisade) ...	37 00 57	118 25 10	14,200	Wheeler...	T Kings-M.C.
Ruskin	36 58 30	118 58 10	12,800	.....	E Kings.
Pk. Marion	36 57 10	118 31 10	12,700	LeConte...	A Kings.
Pinchot	36 56 40	118 24 10	14,000	.....	E Kings-M.C.
Dougherty Pk. ..	36 55 50	118 32 30	12,500	.....	E Kings.
Arrow Pk.	36 55 30	118 27 20	13,400	LeConte...	A Kings.
Pyramid	36 54 10	118 27 36	13,200	.....	E Kings.
Goat	36 52 00	118 34 20	12,300	LeConte...	A Kings.
King	36 49 50	118 26 30	13,200	.....	E Kings.
Black	36 48 46	118 21 44	13,009	Wheeler...	T Kings-M.C.
Gardner	36 48 10	118 27 20	13,220	LeConte...	A Kings.
Rixford	36 46 50	118 23 30	13,200	.....	E Kings.
Gould	36 46 40	118 22 30	13,320	LeConte...	A Kings-M.C.
Charlotte	36 46 00	118 26 00	12,100	LeConte...	A Kings.
University	36 44 40	118 21 40	13,900	LeConte...	A Kings-M.C.
East Vidette	36 44 30	118 24 00	12,000	.....	E Kings.
Brewer	36 42 20	118 29 00	13,886	Whitney...	B Kings.
Stanford	36 42 10	118 23 40	14,100	.....	E Kings-Kern.
Keith	36 41 50	118 20 30	14,200	LeConte...	A Kings-M.C.
Ericsson	36 41 40	118 24 50	14,000	.....	E Kings-Kern.
Junction	36 41 00	118 21 50	14,000	.....	E Kings-Kern-M.C.
Genevra	36 40 50	118 26 00	13,500	.....	E Kings-Kern.
Table	36 39 30	118 28 20	14,000	.....	E Kings-Kern.
Williamson	36 39 11	118 18 40	14,360	Wheeler...	T Owens.
Tyndall	36 39 10	118 20 10	14,100	LeConte...	A Kern-M.C.
Barnard	36 38 20	118 18 30	14,100	.....	E Kern-M.C.
Whitney	36 34 33	118 17 32	14,522	Langley...	B } Kern-M.C.
			14,470	Wheeler...	B. & T. }
Kaweah Pk.	36 31 40	118 28 40	14,140	LeConte...	T Kern.
Corcoran	36 31 14	118 14 24	14,094	Wheeler...	T Kern-M.C.
(Old Mt. Whitney)					
Denels	36 30 46	118 17 50	13,376	Wheeler...	T Kern-M.C.
Olancho	36 15 44	118 07 10	12,251	Wheeler...	T Kern-M.C.

Palisades for six miles; crest averages 14,000 feet.

Kaweah Group; four peaks over 14,000 feet.

KING'S RIVER OUTING, 1902—BOTANICAL
NOTES, INCLUDING AN IMPORTANT
DISCOVERY.

BY J. G. LEMMON.

BIRTH OF THE SIERRA

Geologists tell us that what is now known as California was raised up out of the ocean as a long, thick crust-block, slightly tilted towards the sea; and that it required two tremendous efforts on the part of the subterranean forces to accomplish this result.

The first, occurring in the Jurassic age, raised the crust-block on the eastern side to the height of about a mile; the second, occurring in a comparatively recent age, uplifted the crust-block about two miles higher.

Glaciers have excavated and the resulting rivers have carried away the upper two thirds of this immense upheaval and spread the detritus upon the western slopes and plains, forming the rich soil-beds of California; while leaving as vestiges a grand collection of domes, pyramids, and pinnacles composing the present unique High Sierra.

These rich deposits of moraine soil, in just the right latitude for robust vegetation, and perfectly protected by the Sierra from the hot winds of the arid Great Basin, are fostered by the warm, moisture-laden breezes coming in over the Japan current, and they have invited the presence and forced to perfection the growth of one of the noblest forests on the face of the earth.

The up-tilted block described, being so broad—70 to 100 miles—it is not strange that a series of rivers num-

bering a score or more, were early set running, beginning at the beetling forefronts of the several glaciers; and that they are still found coursing over the plateaus and cascading down the inclines to the longitudinal valley of California.

Also, it is not surprising that many of these mountain streams, following the ancient glacier-beds, have deepened the channels at certain places in their long course where the declivity is greatest. This consideration prepares the mind to anticipate the discoveries made by the early explorers, that there are high-walled chasms and broader, soil-floored valleys gashing the western flank of the Sierra from end to end.

Principal of these torrent-made chasms are the noisy Box Cañon of the Upper Sacramento River, the Deep Gouge of the Feather, the celebrated Hetch-Hetchy of the Tuolumne, the matchless Yosemite of the Merced, the Deep Cañon of the San Joaquin, the Tehipite Valley of the Middle Fork of King's, the Grand Cañon of the South Fork of King's, and the Royal Gorge of the Kern River.

Now it happens that these deep gashes across the flank of the Sierra are in a line corresponding nearly to the crest of the Sierra with its congeries of splintered peaks; and that they are about midway between these peaks and the western foothills.

AND OF THE FOREST.

It is found, also, that the ten groves of the famous Big Trees—*Sequoia Washingtoniana*—are distributed on a line a few miles below this row of chasms, and conforming somewhat to its course and extent. These groves are found to be established upon the ribs or flats between the rivers,—never down in their valleys; and that the groves are at elevations varying greatly from south to north, but exactly on an isothermal line 8,000

feet in altitude in Kern County, grading down to 5,000 in Placer, a distance of 250 miles.

The narrow limits of their range, the want of continuity by spaces from a few miles wide to seventy, and the small number of the larger trees, not exceeding 5,000 all told; their reproduction depending solely upon seedling, indicate the precarious hold on existence possessed by these rare trees, and hint at their possible extermination by only a slight change of climate.

That the Sequoias have selected the best regions of the Sierra slope is proved by the fact that the several groves are found to be nuclei about which are gathered the largest trees of other cone-bearing species. If the Big Trees were not so enormously large and marvelously aged, more attention would be given their monstrous neighbors—the sugar, yellow, and Jeffrey pines, the noble Douglas spruce, the magnificent red fir, the silvery-white fir, and the lovely incense cedar.

SIERRA EXPLORERS

A score of strong, adventurous and appreciative persons, including Fremont, Whitney, Brewer, King, Muir, and the two Le Contes, father and son, have explored and described the glories of the High Sierra and its royal forest robe; while lately the Sierra Club has arranged annual "outings," by means of which other persons of both sexes, young and older, and even partial invalids, are enabled to visit and enjoy the forests and mountains.

The Sierra Club trip of 1901 across the State on the latitude of Yosemite revealed seventeen species of conifer trees alone, the oaks and other broad-leaved trees in like ratio. This is the most prolific cross-section of the State. The King's River section, visited last season, revealed but fourteen conifers, and the Kern pilgrims this year will find fifteen.

The finely illustrated accounts of the King's River

outing, given by several members of the Club, leave little for me to add, and that little must be mostly botanical.

AND PILGRIMS.

Briefly, two hundred persons of both sexes, many of them mountaineers, recruited from San Francisco and vicinity and the towns of Los Angeles and Pasadena, gladly put down their money to be transported by rail along the San Joaquin Valley, reaching at night two towns, Sanger and Visalia, near the middle; thence turning abruptly eastward, in two parties, towards the mountains, and climbing into stage-coaches, they were hurried away up and over the ridges and around foothills strewn with chaparral and oak; the northern party encamping the first night at Millwood near General Grant Park of Big Trees, the southern one, twenty miles southeast, camping near the famous Giant Forest, the largest grove of the sequoias; both to bid adieu to comfortable vehicles thereafter, and tramp on foot,—a few preferring to mount horses,—and to proceed at first slowly and thoughtfully as becomes pilgrims passing through a forest of increasing interest while approaching the

PARADISE OF THE WEST,

the home of the great sequoias.

Detected from a distance, their immense crowns, towering heavenward above the pines and firs, appear like green cumulus clouds. Approaching nearer, some of the pilgrims run towards the trees shouting their joy, others halt and gaze in astonishment. The statisticians carry measuring-lines around their bases, others content themselves with pacing across their shadows.

As the course is continued among the hundreds of columns, it is seen that all the trees are straight and standing perfectly erect. A moment's reflection assures the visitor that this must be the case; no leaning can be allowed. Swerving but a few inches from the perpendic-

ular by these 20-foot columns 200 feet high and weighing hundreds of tons, would doom them to destruction. But few exceptions are known to this rule of perpendicularity. To protect themselves from storms, each is braced with high buttresses, in addition to a mound of roots fifty to one hundred feet across and eight to ten feet high.

The lately discovered "Boole" tree, near Sequoia Mill, ninety-three feet in circumference above its buttresses, and with every branch in perfection, including its lofty crown, is doubtless an ideal specimen of this colossal race.

JOVE'S VICTIMS.

Many of the largest trees, including General Grant and General Sherman, are dead at the top. This injury has been ascribed to lightning, but after much observation and study, I cannot accept this explanation. Some trees undoubtedly have been thus injured, as evidenced by the removal of bark and sapwood forming a furrow from top to bottom, but most of the trees are dead at the top only, with no death channel leading to the ground. To my mind, these are cases of simple starvation by reason of the exhaustion of the soil. The bed-rock may be near the surface under them or the soil is limited by the presence of too many boulders.

How thick and soft is the yellowish bark; how fine and gauzy the foliage; how beautiful the little dark-green globular cones, and the larger brown ripe ones decorating by thousands the high outreaching branches; how lovely the sheen of sunlight glinting between the crowns, relieving the somber gloom; and what visions are revealed at night by the high-piled camp-fire! Spacious temples, sequestered cloisters, exquisite grottoes, extensive vistas, bewildering mazes!

ON THE ROUTE.

The course of the northern party going directly up along King's River after passing through the General

Grant Park, enjoying its monster trees, abounded in steep climbs up and over ridges between the many affluents of the river, each elevation affording different trees, each ravine different flowers, until on the eve of the third day the Grand Cañon of the King's was reached. The southern party, traveling by the longer route, arrived a day later, and all prepared for the permanent camp of two weeks in a lovely park endowed with forest trees and walled in by lofty snow-clad peaks. From thence parties radiated outward and upward, all habited in strong mountain suits, with alpen-stock in hand.

Goat Mountain was first taken as a try-out of endurance, a long hard climb that determined who could go farther subsequently. The grand objective-point of the expedition, the lofty, dominating Mt. Brewer, was ascended by some forty-nine persons. The peaks near Kearsarge Pass—Mts. Gould, Rixford and University—were duly scaled, and a small party of twelve later, made a detour and special trip, *via* Giant Forest and Mineral King, to climb Mt. Whitney, loftiest of United States mountains, outside of Alaska.

What the Sierra climbers saw in detail, of mountain stream, foaming torrent and leaping cascade; of yawning chasms, glacier lakes and frowning cliffs; of distant, alluring passes, and rock-ribbed, towering peaks, as they stood upon snow-striped pinnacles nearly three miles high, will require many a glad hour of after life to relate.

MONUMENTS BY THE WAY.

From the first it was found that many of the peaks, streams and waterfalls, the trees, shrubs and tender plants, bear personal names commemorating their discoverer or some lover of Nature. The whole region of King's River is replete with the name and fame of Prof. Wm. H. Brewer, the indefatigable botanist and mountaineer, who during his early explorations crossed the Sierra crest

thirteen times. The lofty Mt. Brewer, with Brewer Lake and Brewer Creek, are his fitting monuments, and one of his discoveries, the beautiful crimson heather of the Sierra—*Bryanthus Breweri*—particularly abundant around Bullfrog Lake, suggests the change of name to *Bryanthus Lake*, as suggested by the writer and advocated by officers of the Sierra Club.

TRAVELING TREES.

Persons bringing specimens of plants to Mrs. Lemon and myself for identification were puzzled to find the red-barked, dense-foliaged and feather-coned fir of the region was called "Shasta Fir."

The explanation is found in the fact that when first exploring the California forests in 1868, I found this beautiful tree forming the greater part of the forest on the flanks of Mt. Shasta. Subsequently, in 1890, I published it in the Botanists' Report of the State Board of Forestry as "*Abies magnifica*, variety *Shastensis*,—the Shasta Fir." Afterward it was found to be indigenous also to these far-removed southern forests.

Another tree, the curious sub-alpine *Pinus Balfouriana*—the Fox-tail Pine,—with reddish-brown bark, its short leaves in fives, and with little, oblong, purple cones, was first discovered on the slope of Mt. Eddy near Mt. Shasta; since found abundantly and of large size in the south, notably in the region west of Mt. Whitney.

EXILES.

Botanists themselves are surprised to find scattered through the upper King's River region the little round-headed, single-leaved pine—*Pinus monophylla*—whose home is on the hot sides of the low mountains in the Great Basin, bearing its small, green, globular cones, whose delicious nuts were the staple food of the aborigines. A few of the trees are met with on the zig-

zag of Bubb's Creek trail leading up and out of the Grand Cañon.

AND SHIRKS.

Contrariwise, three interesting species of trees common to the region, north and south—the gray pine, the narrow-cone or knob-cone pine, and the noble Douglas spruce—are wholly absent.

RARE TREES.

The Rocky Mountain pine—*Pinus flexilis*—which clothes the mountains of the interior, and the lovely Hemlock Spruce—*Tsuga heterophylla*—of a wide western range, are but sparsely represented on the sub-alpine heights; while the three sub-alpine or truly alpine pines—*Pinus Murrayana*—with its very thin bark and minute thimble-cones; the reddish-barked, oblong-coned Balfour pine—*Pinus Balfouriana*; the white-stemmed, globe-coned Alpine Pine—*Pinus albicaulis*—all growing in abundance near glacial lakes such as Bryanthus, Charlotte and East Lake, become very much alike in appearance, owing to the influence of similar environment—hence are often confounded by the casual observer.

The oaks, maples, alders, poplars, willows, etc., are distributed about as elsewhere, both as to numbers and location.

RARER SHRUBS.

Among the smaller plants collected were several of especial interest, including the brilliant golden-flowered Fremontia—*Fremontodendron Californicum*,—the rare and curious balloon bush—*Staphyleia Bolanderi*—and the edible Sierra plum—*Prunus subcordatus*—while several herbaceous plants are of peculiar interest, including one which becomes a highly-prized souvenir of the late outing.

A NEW LILY!

It is an undescribed lily, two or three feet high, bulbs rhizomatic, with small ovate scales; leaves lanceolate, two to four inches long, mostly in two or three whorls about the middle of the stem; those below and above them scattered; flowers few, in an open raceme, slightly gibbous below, in the bud; segments one to one and one-half inches long, light-yellow or greenish with a few brown spots near the base, spreading and partially reflexed; stamens quite short, causing the large, erect, brown anthers to appear—when young—like a corona about the pistil.

Found (June 30, 1902) along the west rivulets of Copper Creek, a few miles north of Camp Colby; and (July 13th) in springy marshes along Bubb's Creek, about seven miles from the Grand Cañon of King's River. Plants of the larger, yellow-flowered lily abound in the vicinity, but this unknown lily blooms later, and otherwise is quite distinct.

I take great pleasure in naming this beautiful plant, *Lilium Kelleyanum*, in honor of the devoted young naturalist, Lynwood J. Kelley, 2214 Jones Street, San Francisco, California, in grateful acknowledgment of his kind assistance, which enabled me to make the special trip to Bubb's Creek, where plants in full bloom were discovered.

Mr. Kelley (entirely ignorant of my intentions towards him) has gone to the King's River region this season, as usual, and will try to secure bulbs for Carl Purdy of Santa Rosa; so the readers of the BULLETIN may soon see the new lily in cultivation—the fourteenth of the true lilies indigenous to the Pacific Slope.

LEMMON HERBARIUM,

Oakland, Cal., June 1, 1903.

NEAR THE KERN'S GRAND CAÑON.

BY WILLIAM R. DUDLEY.

When the Sierra Club has pitched its tents by the green waters of the hurrying Kern next July, with a leisure hour for reading, it may find interest in these photographs and the notes accompanying them, concerning the byways roundabout that great cañon. Visiting a portion of it in 1895, each successive season has drawn me to it and its surrounding mountains and forests. The cañon is a great north-and-south cleft between perhaps the highest double mountain range in America. The floor of the main gorge for nearly thirty miles varies from 5,000 to 7,000 feet elevation, while within a few miles are Whitney, Tyndall, Williamson, Stanford, on one side; Table Mountain and the Kaweahs on the other—all of which and more reach an elevation of over 14,000 feet, according to our accepted measurements.

In the *SIERRA CLUB BULLETIN* for January, 1898, the present writer printed a brief outline of his previous explorations during three seasons in this region, together with a sketch map, all intended to especially illustrate the great Kaweah group of mountains with their radiating streams, up to that time quite misunderstood by "white" people, although their fastnesses and upper meadows were well known to the shepherders. In the present article the photographs are selected largely from those taken by Otis Wight of our '97 party (now Dr. Wight of Johns Hopkins University Hospital), and are partly

intended to suggest some attractive side excursions during the present season's outing. I will mention four such excursions: To the top of Miner's Peak (Sawtooth) from Mineral King; to the Chagoopah Plateau and Mt. Kaweah from the Kern Cañon; Volcano Creek, its natural bridge, fishing grounds and extinct volcanoes; lastly, the upper valley of the Kern-Kaweah, from the Kern Cañon.

There is nothing in the whole Sierra range more beautiful than the valley of Mineral King in June; nothing more like an upper valley in the Swiss Alps. Some of the Club may choose to stay over, therefore, more than one day; if so, good climbers can take the trail up Monarch Cañon eastward, by the two lakes, and ascend the white, sharp peak, Miners' Peak, shaped like a curved tooth, visible from the Mineral King road for many miles below. Peaks of all hues—red, slate-colored, light-gray—surround you, the culminating group of the Great Western Divide of the Sierras; but the grand view is to the northeast across the Chagoopah forests and the great gash of the Big Arroyo, to the Kaweah peaks. Still farther is a depression where, thousands of feet below, flows the Kern, and on the eastern horizon the group of peaks and palisades about Whitney. I know of no such exhibition in California of the black forest expanse fading into the gray of the higher alps above. It is also a fine grouping of mountain masses, pleasing the artistic feeling. For once the excess and crowding of peaks and snowbanks is wanting, and a sufficient distance lends repose. You can look down between the granite blocks of this overhanging point and see Lake Columbine, probably three thousand feet below.

We insert a view of Farewell Gap looking southward along the upper vale of Mineral King. It is nearly perfect in line, the color of its rocks, and fortunately in



FAREWELL GAP, FROM THE NORTH.

Chagoopah Plateau. † † Red Spur.



KERN LAKE, LOOKING NORTH.

name. Through it will pass the long cavalcades of the Sierra Club, as many have done before; it is the great thoroughfare in the Southern Sierras.

Those who have seen Mr. William Kieth's admirable painting of the Kern Cañon, will recognize in the next photograph the point of view near which the artist made his sketch. His painting is from a higher point than the trail, including more of the cañon and mountains. This is from the spur at the foot of Kern Lake, and but a short distance from the Club's first camp on the Kern.

A good climber ought not to miss Mt. Kaweah. The map clearly indicates the trail to the Funston Meadow, from which the photograph of Mt. Kaweah was taken. You will pass some of the Piñons, or *Pinus monophylla*, the Nevada mountain pine, in the ascent of Funston Creek. Above the great meadow is a pure forest of tamarack pine, *Pinus Murrayana*, through which can be seen the white rocks of one of the long moraines that have come down from Mt. Kaweah. Around the base of the Kaweah peaks, on the upper borders of this plateau, is the finest and most flourishing forest of fox-tail pines, *Pinus Balfouriana*, that exists. The Kern is the true home of this. It extends in a belt from 10,500 to 11,500 feet elevation more or less, on both sides the cañon in all its upper half. Above this belt, on the bare slopes of Mt. Kaweah, are a few stunted white-stemmed pines—*Pinus albicaulis*—very near its southern limit. The view from the top of Mt. Kaweah is only second to that from Mt. Whitney in instructiveness, although it does not equal it in extent or grandeur. I think this excursion can be accomplished in two days from the cañon, camping at the end of the first day at the foot of the peak.

In the picture of the Picket Guard, a peak among the Kaweahs, to be seen through the gap of the Kern-Kaweah, a view is shown taken from a beautiful spot—the

Kern-Kaweah Camp, or Junction Camp, as Judge Wallace's party called it in 1882. It is near the mouth of the stream which drains all the northern slopes of the Kaweahs; is open, sunny and near good fishing grounds.

There are many falls or cascades along the Kern Cañon, but, on the whole, they are not striking like those in the Yosemite. Chagoopah Fall has a height of 1,700 feet or more, of which only the first 150 feet is a sheer descent, the rest is a series of cascades. My photographs of it do not make an impressive picture. There are several pretty "bridal veil" falls near the Red Spur Gap, but perhaps the most characteristic falls of this region are those in the Kern-Kaweah Gap, where that big stream of pure, brilliantly clear water comes pouring out of its upper valley over the excessively glaciated rocks.

The ascent to the upper Kern-Kaweah has one difficult and, in 1897, dangerous spot for pack-animals. But the upper gorges are open, highly glaciated, filled with little lakes, and it is a purely alpine world, quite apart from the rest of the Kern country.

Two views are given instructive as to the union of the great Kaweah spur, consisting of three definite parallel chains radiating southeastward from a single ridge, with the Western Divide, at a peak which I propose here to call The Keystone. I have been on all sides of it, at the head of the Kaweah, at the head of the Roaring River, at the head of the Kern-Kaweah, and have looked into the head of the Big Arroyo from the top of the ridge just south of the long perpendicular streak of snow to be seen near the middle of the picture. In 1896 I also had a view of the source of the Big Arroyo from the opposite side on the Western Divide itself. On the Le Conte map the central geographical position of The Keystone peak will be seen, and the lakes of the four streams

† The Black Kaweah.

† Mt. Kaweah.

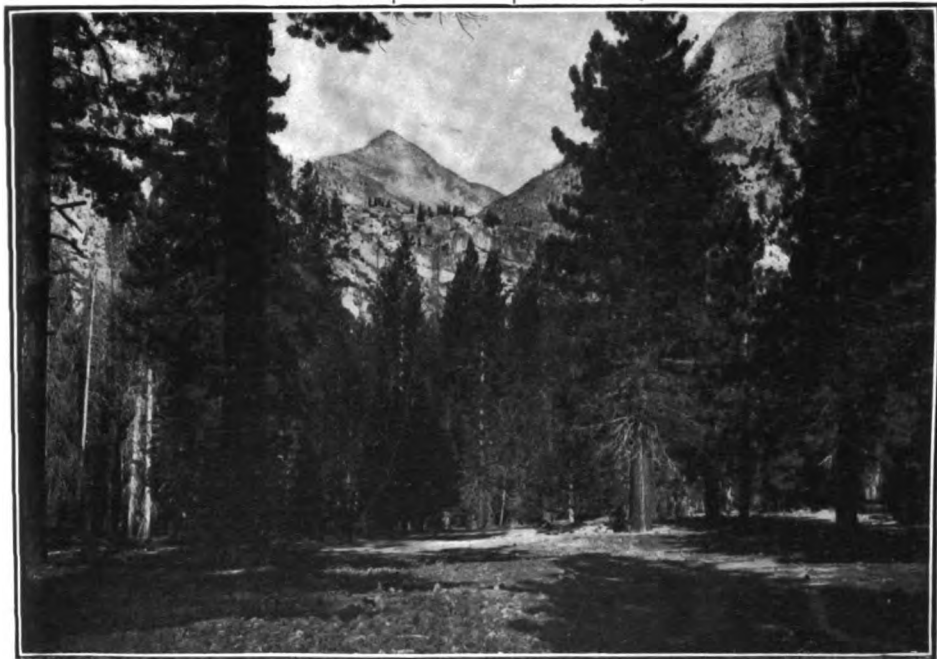
† The Red Spur.



THE KAWEAHS, FROM FUNSTON MEADOW—CHAGOOPAH PLATEAU.

The Picket Guard. †

† Kern-Kaweah Gap.



FROM: KERN-KAWEAH CAMP, ON THE KERN RIVER.

as they were determined and photographed in 1896 and 1897. These photographs were both from near Milestone Peak and show large masses of snow on these elevated chains; indeed, in places crevasses revealed probable small glaciers, the most southerly in the Sierras. The great peaks and the grand scenes are grouped about the upper half of the Kern Cañon. Previous to 1897 and 1898 the maps of this northern half were inaccurate in regard to their main topographic features, the streams and mountains on the west side of the Kern being laid down entirely by guess. Having accumulated nearly two hundred photographs of the Kern country, besides many pencil sketches of their mountain outlines taken from lofty view-points, I ventured to print a sketch map in the SIERRA CLUB BULLETIN for January, 1898, having the great mountain mass of the Kaweahs as its central feature. While there still remain small streams and many small alpine lakelets to be added, I think it remains substantially correct in regard to the features represented. This map was incorporated in Mr. J. N. Le Conte's Sierra Club maps of 1900 and 1903. The latter will no doubt be used by the Club this season, but as it contains certain inaccuracies at critical points along the Kern, not due to Mr. Le Conte, but transferred from another sketch map printed by an army officer who made one hasty journey across the lower part of this region, it seems best to note them here.

The Club is likely to make one camp at the beautiful recess in the cañon just below the mouth of the Kern-Kaweah, from which the photograph of the Picket Guard was taken in 1897. The junction of the Kern-Kaweah with the Kern is *above* the mouth of the so-called East Fork—perhaps one-third of a mile—and not below the latter, as represented on the army map; nor nearly opposite, as on the Club map. Furthermore,

my recollection is that the trail does not recede so far from the Kern at the Kern-Kaweah Camp. After passing up the Kern, above this camp perhaps a mile, a trail will now be found following our ascent out of the cañon in 1897, and constructed in 1902, at the instance of the Visalia Board of Trade. It leads easily up to the plateau, crosses the East Fork and soon joins the north and south trail, from which Mt. Whitney is reached.

The trail from Funston (Chagoopah) Meadow to Mt. Kaweah leads out of the eastern side as well as the western side.

Mt. Kaweah is the form which has long been used locally for the round-topped peak in the Kaweah group,—not “Kaweah Peak.” As the collective name “The Kaweah Peaks” is so often used, Mt. Kaweah is more distinctive.

Moraine Lake has no visible outlet that I could discover. It was formed in the bowl of a great, gravelly, porous moraine, hence the name we gave it seemed particularly appropriate.

The Sierra Club map makes the trail to the Big Arroyo and Soda Creek to proceed directly toward the mouth of the latter from Funston Meadow. Instead, it goes from the south side of the latter and in a south-westerly direction, reaches the Big Arroyo much below Soda Creek, then follows up the east bank and crosses near the mouth of the creek. A delicious soda and iron spring, by the way, is up the Big Arroyo a few hundred yards, as I recollect, from Soda Creek. It is suggested that “Alta Peak” be substituted as a name for what is denominated Tharp’s Peak on the present Club map. It is a most conspicuous crag eastward from the Giant Forest, as seen from Three Rivers. We climbed it in 1896, when, so far as we know, it had no name. The name Alta Peak then given from the long-named Alta Meadow

† The Red Spur.

† Mt. Kaweah.

† The Black Kaweah.

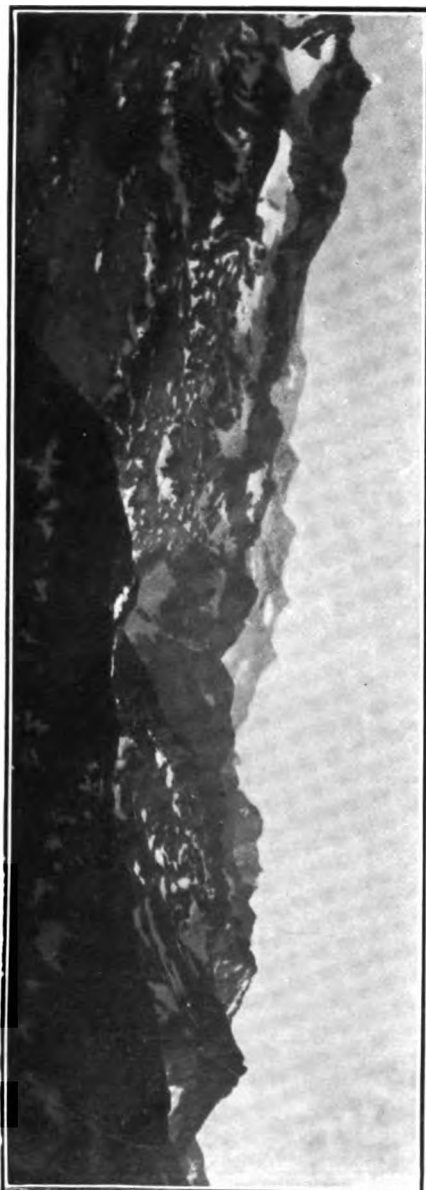


THE KAWEAH GROUP, FROM MILESTONE BOWL.

† The Kaweah Group.

† The Western Divide.

† The Keystone.



JUNCTION OF THE KAWEAHS WITH THE WESTERN DIVIDE.

Western Divide, North of the Kaweah.

on its slope, ~~has~~ been almost universally adopted by the Three Rivers people and the frequenters of the Giant Forest. Besides, it is euphonious and appropriate.

The Club will do a service in nomenclature, in following the practice introduced, I think, by the Tulare County people, calling the large creek on the east, joining the Kern above Kern Lake, "Volcano" Creek; transferring a former name, "Whitney" Creek, to the creek coming directly from the base of Mt. Whitney and sometimes called Crabtree Creek. This arrangement has been adopted on Le Conte's map of 1903, as it was on our map of January, 1898. Volcano Creek is the home of the famous golden trout, believed to be a distinct species by President Jordan.

SIERRA CLUB BULLETIN.

PUBLISHED IN JANUARY AND MAY OF EACH YEAR.

Published for Members.

Annual Dues, \$3.00.

The purposes of the Club are:—"To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada Mountains."

OFFICERS FOR THE YEAR 1902-1903.

Board of Directors.

Mr. JOHN MUIR	<i>President</i>
Mr. ELLIOTT MCALLISTER	<i>Vice-President</i>
Mr. J. N. LE CONTE	<i>Treasurer</i>
Prof. W. R. DUDLEY	<i>Corresponding Secretary</i>
Mr. WILLIAM E. COLBY	<i>Recording Secretary</i>
Prof. GEORGE DAVIDSON,	Mr. J. S. HUTCHINSON, JR.,
Mr. WARREN GREGORY,	Mr. WARREN OLNEY.

Auditing Committee,

Directors GREGORY, MCALLISTER, and DUDLEY.

Committee on Publications,

Pres. DAVID STARR JORDAN, *Chairman.*

Mr. J. S. HUTCHINSON, Jr.,	Dr. MARSDEN MANSON,
<i>Editor Sierra Club Bulletin,</i>	Dr. EMMET RIXFORD,
Mr. A. G. ELLS,	Mr. E. T. PARSONS,
Mr. J. S. BUNNELL,	Mr. R. H. F. VARIEL,
Prof. J. H. SENGEL,	Mr. TRACY R. KELLEY.

Committee on Admissions,

Directors DUDLEY, OLNEY, and MCALLISTER.

Committee on Parks and Reservations,

Prof. GEORGE DAVIDSON, *Chairman.*

Prof. W. R. DUDLEY,	Pres. DAVID STARR JORDAN,
Mr. J. M. ELLIOTT,	Mr. ABBOT KINNEY.

Committee on Outing and Transportation,

Mr. WM. E. COLBY, *Chairman.*

Mr. J. N. LE CONTE,	Mr. EDWARD T. PARSONS.
---------------------	------------------------

SECRETARY'S REPORT.

FROM MAY 10, 1902, TO MAY 9, 1903.

As shown by the Treasurer's report, the Club was never in a better financial condition. The balance of "cash on hand" is larger than ever before, despite the fact that the Club's expenses have increased all along the line. We are rapidly reaching a point where we can engage in more active work in the Sierra, such as the repair and construction of trails leading into regions of interest to our Club. The Club BULLETIN is also gradually expanding in size and increasing in circulation. Through the generous efforts of Mr. E. T. Parsons, an exchange of publications has just been arranged with the Appalachian Mountain Club, whereby each of our members will receive their magazine regularly. This is a most valuable innovation, for the *Appalachia* sets a high standard of excellence for mountaineering publications.

Our membership is rapidly increasing. There were 149 new members added during the year, and 41 names removed from the list, owing to death, resignation, or non-payment of dues, leaving a total membership at this date of 663. There are 65 applications pending, thus insuring that our list will reach the 700 mark before long.

The recently elected Board of Directors and their officers are set forth on another page of this BULLETIN. The club is to be congratulated in the election to the Board of Mr. J. S. Hutchinson, Jr., for he has long been an untiring and unselfish worker in the Club's behalf, particularly in the editing of the BULLETIN.

Respectfully submitted,

WM. E. COLBY,

Secretary of the Sierra Club.

TREASURER'S REPORT.

FROM MAY 10, 1902, TO MAY 9, 1903.

RECEIPTS.

Cash on hand May 10, 1902.....	\$ 467 56
Total cash received from Secretary.....	2,056 02
	<hr/>
	\$2,523 58

EXPENDITURES.

Publications	\$1,047 90
Printing circulars, postage, and stationery.....	258 46
Room rent for 12 months	195 00
Public meetings	62 88
Yosemite headquarters	52 50
For fitting up new room	38 00
Clerical work and typewriting (12 months).....	180 00
Incidentals	73 89
	<hr/>
	\$1,908 63
Cash on hand May 9, 1903.....	614 95
	<hr/>
	\$2,523 58

Respectfully submitted,

J. N. LE CONTE,
Treasurer.

NOTES AND CORRESPONDENCE.

In addition to longer articles suitable for the body of the magazine, the editor would be glad to receive brief memoranda of all noteworthy trips or explorations, together with brief comment and suggestion on any topics of general interest to the Club. Descriptive or narrative articles, or notes concerning the animals, birds, forests, trails, geology, botany, etc., of the mountains, will be acceptable.

The office of the Sierra Club is at Room 16, Third Floor, Mills Building, San Francisco, where all the maps, photographs, and other records of the Club are kept.

There are but a few copies on file of No. 3, Vol. I., of the BULLETIN. The Club would like to purchase additional copies of that number, and we hope any member having extra copies will send them to the Secretary.

NEW MAPS OF THE SIERRA NEVADA MOUNTAINS.

The three maps of the Sierra Nevada Mountains, hitherto printed as ordinary blue prints, have this year been revised, and are now printed by a new process, as blue lines on white paper. This greatly increases the utility of the maps, as notes and new features can be added by the traveler in pencil. These maps, as before, are three in number: No. 1, The Yosemite National Park; No. 2, The Basin of the San Joaquin River; and No. 3, The Basins of the Kings, Kern, and Kaweah rivers.

The price of each of these new maps will be \$1.50. The old blue-print maps will not be sold after this date.

BERKELEY, CAL., April 1, 1903.

J. N. LE CONTE.

THE LE CONTE MAPS.

The Le Conte maps of the Sierra Nevada Mountains, which are referred to in the preceding note, are unique in their fullness of detail, being made from the U. S. maps, where the territory is covered by such maps, and having added thereto the records of more than ten summers in the Sierra, during which Mr. Le Conte has carefully platted hitherto unvisited regions, and established trails, altitudes, and other topographical features. All these data, together with the government surveys, complete a set of maps which are indispensable to one intending to visit the Sierra, and which, for those who have seen the magnificence of those regions, are a record of delightful memories of mountaineering days.

E. T. PARSONS.

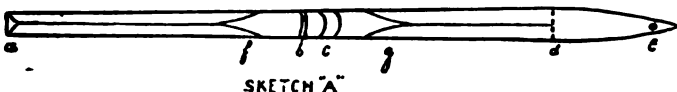
HOW TO MAKE "SKIES."

PORTLAND, Ore., 3/10 1903.

MR. E. T. PARSONS, San Francisco, Cal.,

DEAR SIR:—Your favor about "Skies" at hand. I hasten to reply. I made three pairs—one of ash, one of oak, and one of spruce. Any light wood that will wear smooth will do. The dimensions can be varied from, slightly, to suit the fancy of the owner. I fashioned these after skies used by "Snowshoe Thompson" in carrying the mail over the Sierra before the days of the Pony Express, as near as my memory would serve. Most any carpenter can make them. I will try to give you sufficient directions for that purpose.

See sketch A.



From *a* to *e*, 7 to 12 feet. (Mine are 10 feet.)

Width at *d* about $4\frac{1}{2}$ inches, and tapering gradually back to about $3\frac{1}{2}$ inches at *a*.

Beveled on two sides from *a* to *f* and from *g* to *d*.

Flat, thin, and turned up from *d* to *e*—that would be about 16 inches.

From *f* to *g*, flat on top and about 1 inch thick, or thick enough to stand your weight when resting on supports about 7 feet apart.

The edges on the underside should be square and not rounding.

The underside should be worked down smooth and oiled.

The point from *d* to *e* should be thoroughly steamed, then bent around a graceful form and allowed to cool. Make the form a trifle sharper, as it will spring back some after cooling.

At *c* put a strap of rather firm or stiff leather—say light sole leather; this should be about 3 inches broad and set in *flush* on either side of the skies, fastened with 4 or 5 small screws on each side. This part of the work must be done well and solidly, so that the strain, which is quite severe here, is well distributed over toe and instep. There should be sufficient room to let your toe well in, even though you had some wrapping around it to keep warm.

A small hole at *e* is convenient in case one wants to trail his skies at times.

At *a* leave the end square and a little thick, so that in going up hill, in case the skie slipped back, it would form a check or buttress. This, however, is not essential.

At *b* should be fixed a cleat, solidly. It should go well up under the hollow of the foot. The heel comes behind this. The chances

are you will not get this cleat up near enough to the toe-strap, as the toe works further under the strap when it stretches. This cleat should be about $1 \times \frac{3}{4}$ inches \pm width of the skie. It should have a tough piece of leather at each end, solidly tacked on, to form a sort of notch, to prevent the hollow of the foot from slipping off sideways.

This cleat is not essential, but, if it is left off altogether, you should take a common shawl strap, double the buckle end over and screw it down on the skie a few inches in front of *c*. This strap should be brought back with one turn around the ankle and crossed over and buckled in. This is for the purpose of holding the foot from slipping out of the skie and still allowing the heel to have proper up and down motion, or to take the place of the cleat.

The most particular point is to get the proper *balance*. The front part should rise a little when lifted by the toe in the strap *c*.

When the skie is all fashioned place a weight at *d*, equivalent to two silver dollars, then balance it, and the point of balance is the point to place the strap *c*.

A 10- or 12-foot pole—very light—and reasonably strong, with a small push disk at one end, should be used.

Yours truly,

L. L. HAWKINS.

ORGANIZATION OF THE MONTARA CLUB.

On Wednesday, February 18, 1903, Messrs. Brewer, Oliver, Durrell, Posey and Dils, the majority of whom are citizens of San Mateo, assembled in the rooms of the "Salteros Club," at St. Matthew's School, to discuss the advisability of forming an organization to be known as the "Montara Club," whose nature and objects are described in the articles of incorporation, a synopsis of which appears below:—

(1) To enjoy, and to help other persons to enjoy, the mountain and coast regions of West Central California, especially throughout the section known as the San Mateo Peninsula.

(2) To arouse and to foster a wider interest on the part of the community in the investigation and study of the natural and historical features of the said San Mateo Peninsula,—e. g. the botanical, the ornithological, the geological, and the ethnological phenomena.

(3) To record, and to publish, from time to time, brief reports of investigations made by members of the club, and whenever desirable, to communicate with other clubs of like purpose concerning such investigations and studies.

At a meeting of the club held on February 25th the fore-

going articles of incorporation were read and adopted. This was followed by the election of permanent officers, which resulted in the election of Messrs. Brewer and Oliver to the offices of President and Secretary-Treasurer, respectively.—*San Mateo Leader*, March 3, 1903.

ANOTHER VIEW OF THE KING'S RIVER OUTING.

On its outing in 1902 the Sierra Club entered the cañon of King's River in two divisions. The first, starting from San Francisco, traveled by rail to Sanger, thence by stage-coach to Millwood, completing the journey on foot. Part of the second division started from Los Angeles. A few members of this party had some acquaintance among themselves, but most were strangers, and only the thought that the presence of each member implied recognition by the Club reconciled us to associating with such costumes. As the palace sleeper promised by the railway companies proved to be an old tourist car, our fellow-passengers were, perhaps, justified in assuming us to be poor emigrants seeking new and humble homes in the Golden West.

Formality was at once cast aside, introductions were exchanged—or dispensed with—and before an hour had passed, we were a party of friends. The night was spent in the sleeper. Early in the morning we were marshalled to the Palace Hotel at Visalia for breakfast. Here we met the San Francisco members of our party. Observing in the dining-room a number of costumes which were, to say the least, peculiar, a fastidious dame from the South inquired if it were really necessary that she take breakfast with such people as those; while a San Francisco gentleman of elegant tastes declared he could not be associated with such brigands. Again the mellowing influence of the Club reconciled each to the other, and soon we were fraternally engaged at breakfast.

Then came the assembling in the coaches, where groups were broken up, only to again coalesce in the formation of new and pleasant associations.

For more than ten miles we drove through the beautiful pastoral region of Tulare County, where the laden fruit trees, graceful elms and stately oaks suggested to some, an English landscape, to others, memories of old homes in the East.

At Redstone Park we received a suggestion of the pastoral life of the former Kaweah colony. On passing Three Rivers

we seemed to be really coming to the mountains. Grades grew steeper, the vegetation changed, and that sweet, mysterious influence which all true mountaineers know and love, told us we were "going home." As we drove beside the streams, the sight of trout caused many thrills of joyful anticipation; and some of us began to experience the beginning of that gradual disintegration of the moral faculties which comes from association with fish and fishermen.

Our evening meal was eaten by the light of very few candles, and was not a ceremonious function. Then came a frantic search for dunnage bags. They were *somewhere* on the mountain side; darkness had set in, and the problem was to find them. Here Mr. Britten, the ranger of the Giant Forest, came to our assistance, and rendered valiant service. Many a lone female—and some irritated males—will gratefully remember the assistance of his strong arm and kindly courtesy. Many a dunnage bag did he carry to "the best camping place." Camping places found, a new problem was presented. Many of us had never seen a sleeping-bag before. How to get the sleeping-bag out of the dunnage-bag, and then get one's person into the sleeping-bag, all in the dark, was the question. But it was solved at last. We were all in our bags, whether "right end to" or not did not matter. And, then, soothed by the music of the wind in the pines, lulled by the sound of a distant cataract, we lapsed into—*not* sleep for many. It seemed we had selected the hardest spot on the range as our resting-place, which, combined with the novelty of the situation, and the active attention of the red ants, made most of us strangers to sleep. But we rose invigorated, prepared for our first tramp.

We had been informed that the real walk would begin at this point. But the coaches were again placed at our service, and, in a rapid dash over about five miles of admirably graded road, brought us to the end of the drive. Here legging strings were tightened, packs adjusted, and we had our first taste of real work in a steep scramble up the hill at the beginning of the Giant Forest trail. Mr. Britten again came to our aid, placing his horse at the service of several women. The tramp to Giant Forest was easy, and soon we were among the wonderful big trees. I shall not attempt to do that which has never been done—that is, to give an adequate description of these trees. Our resting-place was the beautiful Round Meadow,—our first mountain meadow. The scene was one always to be remembered. The pillared trunks of the trees formed a noble background for the little drama of

humanity, and children flitting through the woods added that effect of nymph and faun which alone was needed to make a scene truly Arcadian.

In the morning we had a fairly early start and wandered for several miles among magnificent trees, pausing a moment by "General Sherman." Then we plunged down a long slope, across a creek, up a steep hillside, to our lunching-place.

Nothing of especial interest marked the afternoon tramp. But every moment was thoroughly enjoyed. We seemed at last to have left civilization and to be almost among the mountains. The changing vegetation, brooks tumbling madly over the rocks, and views of distant peaks, told us we were nearing our goal. There were two really steep climbs to be made, which proved rather trying to muscles not yet accustomed to their work.

Horse Corral Meadow had been fixed as our resting-place for the night, but it was deemed advisable to substitute Clover Creek. So we camped in a fine grove, near a little brook.

After supper we had our first camp-fire. We were now becoming acquainted, and songs, talks and cheerful conversation made the evening pass rapidly and pleasantly.

Our start next morning was a short but hard climb up a rocky ridge. From the top of this ridge the way seemed to increase in beauty and interest with every step. We passed through several meadows of surpassing beauty, and saw our first snow-bank.

At one point, as our trail passed along the rim of an enormous cañon, we had our first view of the High Sierra. From this point we could see the Kaweah Peaks, Table Mountain, Brewer, University, and many other high peaks which we could not name. All were grand, but our chief interest was in Brewer. This was to be the scene of our most adventurous climb, and long did we study its features. As we gazed at its broad snow-fields lying between projecting ridges we wondered what it would bring to us, and what we should find upon its stony sides. I regret that I cannot name our view-point. No name was given on our map. The view from this place would alone repay one for the entire trip. It is grand beyond expression and should be better known.

From this point we descended rapidly, and after a plunge down a very steep incline, came out into the beautiful Horse Corral Meadow, which, with its coves, bends, and arms, seemed more like an emerald mountain lake than a meadow.

As our advance guard reached the farther edge of the meadow, all was excitement. The "Sanger Division" had just passed. It seemed then as if the real business of the trip had begun, and our hearts warmed to these unknown friends. Some of us were for pushing on in the hope of overtaking the Sanger division, or at least of spending the night at the hotel at Cedar Grove. But it was decided to wait for our main body. The advance guard was several miles in advance of the others, and it was not best to become separated. So the advance guard went into camp on a mound near the trail. One or two restless spirits tried the neighboring stream for trout, but with no results, except a sight of the Sanger pack-train.

Our evening camp was made at Sierra Meadow. Again came the camp-fire, more music, and a pleasant surprise. Patsy, one of the "boys" who made our trip so easy, entertained us with a number of Irish songs. There was also an outburst of "home talent" in poetry and music, which crystalized into a song commemorating the abandonment of our dunnage bags, sung to the doleful measures of "Clementine."

Early the next morning—Saturday—we were off, inspired with the thought that the cañon was near and eager to explore its beauties. The winding way to the floor of the cañon was long, but glimpses of the river and views of distant peaks made it all one long delight. At Cedar Grove, we paused at the hotel built by an adventurous squatter and abandoned at the "request" of the government. Here we were invited by the road-makers to stop and eat trout from King's River, and accepted with alacrity.

Then came the final tramp along the river. At every step came a new beauty, a fresher charm. The river grew more rapid, and foamed with a louder note. Cliffs grew higher and steeper, and the sides of the cañon assumed that wall-like appearance which marks the true yosemite.

In our anxiety to get into camp, the way seemed long. At last we were under the shadow of the Grand Sentinel; then the assembly-tent—soon to be the focus of a jolly, happy life—came into sight. Then came friendly greetings from the Sanger division—already at home—then unpacking. It was now truly "the mountains." Giant peaks were near, the river dashed in mad cascades, the air was full of the inspiration of the heights. Far from the trammels of everyday life, we lived anew, close to nature. We had come home.

WILLOUGHBY RODMAN.

MT. WHITNEY CLUB JOURNAL.

The second number of Volume I. (May, 1903) of the *Mt. Whitney Club Journal* has been handed to me, just as our *BULLETIN* is about to go to press. I have read this journal with extreme pleasure and find that it contains much valuable information concerning the mountains in the neighborhood of Mt. Whitney, and much that will be of interest to the members of the Sierra Club who go on the Kern Cañon outing.

There is an instructive article by Theodore H. Whittell upon "The Country of the Golden Trout." It gives an account of the golden trout, and also describes Whitney Creek.

Mr. P. M. Norboe gives a description of the four principal trails into the valley of the Little Kern, and also gives a short account of the principal objects of interest to be seen on these trails. Other trails of that vicinity are also mentioned. It is valuable to those unfamiliar with the trails of that portion of the Sierra.

Mr. C. S. Newhall, Forest Superintendent, calls attention to some much-needed forestry legislation. His suggestions are worthy of our careful consideration.

"Itinerary of Trip to Mt. Whitney" is the title of an article by Ben M. Maddox, who, as a representative of the Visalia Board of Trade, made a trip into the Mt. Whitney region with Congressman J. C. Needham, to point out to Mr. Needham the need of roads and trails. As a result of the trip, Congress appropriated \$40,000 for the Sequoia National Park and \$10,000 for the General Grant Park.

An account of several of the early explorations about Mt. Whitney is given by Mr. George W. Stewart. Mr. Stewart, in another article, makes suggestions about outfitting for mountain trips, and his wife gives advice to women campers concerning what they should take and do on mountain outings. Both of these articles contain valuable suggestions.

Besides these articles, there are many short notes about sheep trespassing, trail-building, forest reserves, altitudes and locations of mountains and kindred subjects.

The Mt. Whitney Club, although only just beginning its career, has shown a remarkable enterprise and energy. Co-operating with the Board of Supervisors of Tulare County and with the Board of Trade of Visalia, they have done and are doing much toward making the mountain regions about Mt. Whitney accessible to mountaineers.

The Mt. Whitney Club through the pages of its *Journal* extends a cordial welcome to all members of the Sierra Club who are planning to go on the Kern Cañon outing. This welcome will be greatly appreciated by all members of our Club.

J. S. HUTCHINSON.

FORESTRY NOTES.

EDITED BY PROFESSOR WILLIAM R. DUDLEY.

THE CO-OPERATIVE FORESTRY FUND. The California Assembly Bill No. 75, passed by the Legislature and signed by Governor Pardee March 3, 1903, appropriating \$60,000, one fourth of which is to be used in co-operating with the U. S. Bureau of Forestry in forest investigations in this State, is much the most important act to be chronicled. Nothing that has ever been done in California since the creation of her parks and forest reservations, has been so far-reaching in forestry matters as this is likely to be. The Act is entitled: *An Act to provide for the joint investigation with the Federal Government of the Water Resources of the State and of the best method of Preserving the Forests thereof, and making an appropriation for the expenses of such investigations.* Besides other objects, the text of the bill provides that "the State Board of Examiners be empowered to enter into contracts with the Chief of the Bureau of Forestry of the United States Department of Agriculture, for the purpose of studying the forest resources of the State and their proper conservation, and especially with a view to formulating a proper State forestry policy, to the extent of fifteen thousand dollars."

Mr. Gifford Pinchot, the chief of the Bureau, is expected in California early in June to organize this work; several of his assistants have already arrived. Mr. A. F. Potter will have charge of the work of examining lands suspended from sale in Northern California last October, to determine the best boundary lines of these proposed reserves; and also the work of adjustment of the boundaries of the older reserves with a view to the best interest of all concerned. Professor Filibert Roth will assist him during part of the summer. Altogether it is expected that seven members of the Bureau of Forestry staff will be engaged in expert work on the forests of California during the present season. Besides the work of delimiting the forest reserves, the foresters will be engaged in ascertaining the composition of the forests

and their relative value in different parts of the reserves; also the arduous task of mapping correctly the forest areas of the State. The bureau expects to furnish for these investigations during the next two years, a sum equal at least to the \$15,000 furnished by the State.

Unfortunately the bill authorizing the State to acquire deforested, or delinquent tax-sale land in the mountains for forest purposes, failed to pass the Legislature. The bill establishing a Department of Forestry at the State University also failed; but both these measures are sure of favorable action in a future legislature. Through the joint investigation act, California is to be congratulated for the long stride in advance, and toward the ends long sought in the pages of this magazine. For this result the State should thank William Thomas and his associates in the Water and Forest Association for their energy and practical wisdom.

THE PROPOSED Considerable space in the last BULLETIN CALIFORNIA was devoted to proposed forest reserves RESERVES. in Northern California, covering the Siskiyou, Salmon and a part of the Trinity Mountains, the Shasta region, the great lava mountains about Lassen's Butte, the Sierra Nevadas from the Tahoe reservation northward, the Warner Mountains in the northeastern part of the State, and the Coast Ranges centering about Sanhedrin Mountain on the west side of the Sacramento Valley. All the public land in 517 townships, which embrace about 12,000,000 acres, is withdrawn from sale and entry, pending the examination and classification already spoken of. Great tract of patented land lie within this area, therefore the amount actually withdrawn is perhaps half the above amount. This was withdrawn in part to check the enormous timber land frauds going on since 1901, in part to conserve the native forests and the sources of the Sacramento's tributaries, in part to cover the ground in the foothills needed for storage reservoir sites. In addition to the above a strip has been suspended all along the western border of the present forest reserves from the Tahoe reserve to the southern end of the Sierras. This varies from two to three townships in width (a total of 87 townships), includes much timber land in the northern part, but is chiefly chaparral and foothill land in the south, and includes many patented tracts. As an example, it extends only to the lower margin of the pine forest east of Coulterville, but in Tulare County includes all such settlements as Three

Rivers and those on the North Tule River and extends quite to the lower margin of the foothills east of Lemon Cove. Evidently the Secretary of the Interior desires to withdraw from possible entry any land containing valuable storage reservoir sites in the foothills of Fresno and Tulare counties.

In the February BULLETIN we spoke of the violent objections expressed by some of the residents of certain counties affected by these suspensions in Northern California. The approval of the reserves by the great body of California citizens we have always regarded of the first importance. If the *bona fide* residents with a full understanding of the intent of forest reservations, and a knowledge that the principles of economic forestry will eventually be applied to them, do not wish the forests so treated, then the whole forestry fight is a failure. We still believe that the opposition of residents in Northern California was due to a misunderstanding of the intent of the reserves, which was created and more or less openly encouraged by the timber syndicates and speculators and the local newspapers subsidized by them. They were caught with their plans for fraudulent acquirement but half completed; indeed, we have good authority for saying that the October order for suspension saved to the United States hundreds of thousands of acres which were in various stages of illegal transference. Without doubt there is now a better understanding of the true merits of the reserves; at least public opposition, excepting through a few subsidized newspapers, has been inconspicuous during the past five months. By far the most telling work in support of the order of suspension has been done by the miners (the practical miners and not the Miners' Association), *The Mining and Engineering Review* (San Francisco), and the State Mineralogist. The General Land Office is in possession of overwhelming evidence showing the great extent of the illegal land transfers in Northern California during the last two years, while the investigations of lands, now going on, make it clear that the matter will be rightly adjusted at an early day. As an illustration of the convincing character of the evidence against the timber stealers and speculators we wish to call attention to the vigorous article by J. A. Edman, M. E., in *The Mining and Engineering Review* for March 7, 1903, entitled "Stealing Mineral Lands." It gives in great detail, by aid of a map, the operations of one H. H. Yard of New Jersey, in Butte and Plumas counties from June to December, 1902, by which he located under the placer mining law 124,823 acres of land, mostly

timber bearing and but a small proportion *known* to have mineral deposits. The character of this bold operation will be seen when we read Mr. Edman's statement that "a strict interpretation of the law allows only one claim of twenty acres to the individual and a maximum of 160 acres to a company." As we understand it this effort of Yard, in view of the order of suspension by the Land Office, amounts only to a burglarious attempt on California, and that it cannot be completed except by criminal connivance of the local Land Office which is no longer likely. Mr. Edman is a miner and engineer engaged in business in Plumas County for above thirty years, is highly respected and well known among the geologists and mining engineers of this country for his intelligence and integrity. He was abusively attacked by a Quincy paper; his letter in reply and a vigorous defense by the editor of the *Review*, both in that journal for March 28th, do not indicate they were getting the worst of a controversy.

THE PUBLIC LAND LAWS. The President has publicly advised the modification or repeal by Congress of the desert land law, the timber and stone law, and a part of the homestead law on account of the abuses to which they are now subjected. We perceive that other land laws form a cover to fraud and irregularities. This advice has attracted widespread attention but led to no definite action. We respectfully suggest to the American Forestry Association the appointment of a committee whose duty it shall be to confer with the best and most trusted students of these questions in Congress and with the advisers of the President, that the effect of such repeal on the interests of home seekers may be carefully studied and weighed, and that new laws to meet the present exigencies—very different from those of twenty or thirty years ago—may be most carefully devised. Wholesale frauds in California during the first years of this century have proven that only one other thing is of more importance to our public land interests, and that is honest, capable officials in our land offices. The last must be held to their duties by closer scrutiny of their official acts by miners, foresters and business men.

Improvement in the personnel of the land offices will be expected under the present administration and the present Commissioner. The resignation of Binger Herman was followed by the promotion, February 1st, of the Assistant Commissioner, William A. Richards, at one time Governor of Wyoming, to be Commissioner.

APPROPRIATIONS.

According to *Forestry and Irrigation*, the Bureau of Forestry receives for the fiscal year 1903-1904 an appropriation of \$350,000, an increase of \$59,000 over that of the preceding year. The Division of Forest Reserves, United States Land Office, gets \$375,000 as against \$300,000 last year, when the appropriation was cut down from \$500,000 in 1901-1902. This false economy in 1902-1903 resulting in the dismissal of rangers in Southern California caused much alarm there for the safety of their mountain forests.

The California Redwood Park Commission receives \$10,000 from the State to cover the expenses of care, maintenance, and limited improvements during the next two years.

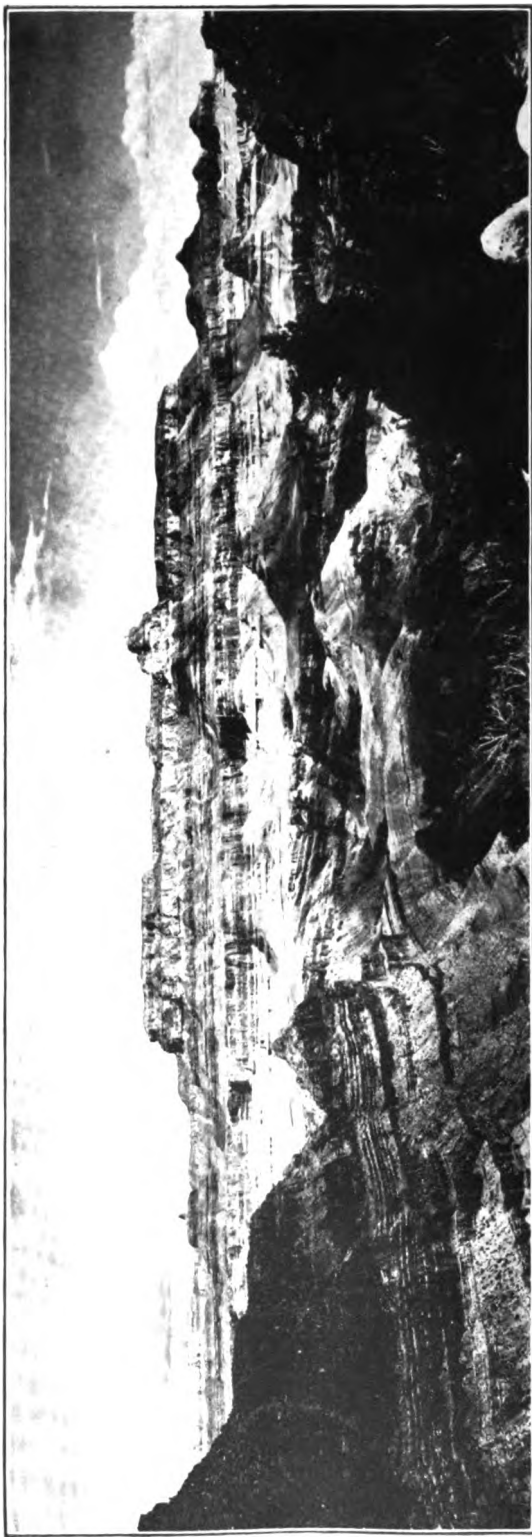
PRESIDENT

The united interests of forestry and irrigation have reason to feel a greater confidence in the future than ever before. This is due not more to the steady advance in legislation and public interest than to the remarkable grasp of these subjects possessed by the President and to his oft-expressed opinion or counsel.

One of the very best statements of the practical relations of forestry was made by the President in an address on March 26th, before the Society of American Foresters at Washington. This is published in *Forestry and Irrigation* for April, and was listened to not only by the technical foresters of the United States but by the Secretary of Agriculture, the Commissioner of Lands and other responsible officials.

Commissioner Richards has recently made a careful public statement of the President's attitude toward the public land and the forestry questions and it is extremely encouraging to the people of the West.

Again, on the occasion of the recent visit of the President in California, he gave voice to his eminently logical views on this subject in his first speech in California at Redlands, and later at Leland Stanford Jr. University in perhaps the most carefully prepared address made on his journey. He showed himself familiar with our effort to save the Calaveras Grove, saying "it is not yet safe, and there should be no rest until that safety is secured by the action of private individuals, by the action of the State, or by the action of the nation. The interest of California in forest protection was shown even more effectively by the purchase of the Big Basin Redwood Park, a superb forest property, the possession of which should be a source of just pride to all citizens jealous of California's good name."



PRESIDENT ROOSEVELT said of the GRAND CANYON OF ARIZONA :

“ I have come here to see the Grand Canyon of Arizona, because in that canyon Arizona has a natural wonder, which, so far as I know, is in kind absolutely unparalleled throughout the rest of the world. I shall not attempt to describe it, because I cannot. I could not choose words that would convey or that could convey to any outsider what that canyon is. The only word I can use for it is awful. It filled me with awe such as I have never before known. It is beyond comparison ; it is beyond description. ”

Spanish Peaks, Colorado.



**The only road to the Grand Canyon
and Petrified Forest, and the best to**

**Yosemite Valley
The Big Trees
General Grant National Park
Sequoia National Park
Yosemite National Park
Kern River Canyon
King's River Canyon
Mount Whitney
Mount Brewer
Mount Williamson
Mount Tyndall
And all the High Sierra**

SANTA FE

Petrified Forest, Arizona.



WAKELEE & CO.

Leading Druggists

MAKE A SPECIALTY OF SUPPLYING USEFUL
HANDY REQUISITES FOR OUTING TRIPS

A Foot Powder . .

That prevents Blisters, Aching and Sweating of the Feet;

A Tablet of Kola. . .

That Stimulates and makes long Journeys without Food possible;

Toilet Creams . .

In collapsible Tubes convenient for Packing;

Roll Ups . .

For Hair Brush, Soap, Comb, &c.;

Dr. Noe's Poison Oak Salve . .

A necessary Remedy

Camelline for the Complexion . .

Prevents, cures and eradicates Sunburn, Poison Oak, Freckles and Heat Rash

ARE A FEW OF THE MANY USEFUL ARTICLES
THAT MAY BE FOUND AT THE STORES OF

WAKELEE & CO., Bush and Montgomery Streets, and
Polk and Sutter Streets



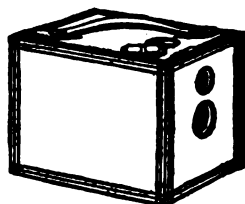
Southern California Sierra
Club Members Take Notice

*We are prepared to Equip
you for the Trip . . .*

FISHING TACKLE	PHOTO SUPPLIES
KHAKI CLOTHING	AIR MATTRESSES
LEGGINGS	FOLDING TENTS
MOUNTAIN BOOTS	SWEATERS
SLEEPING BAGS	GAME BAGS
DUNNAGE BAGS	LANZ CANTEENS
COMPASSES	FLASKS AND CUPS
BATHING SUITS	FOLDING LANTERNS

**TUFTS-LYON
ARMS CO.**

132-134 South Spring Street
LOS ANGELES, CAL.



About your Photo Supplies

That is our whole business. We carry everything in stock that an amateur needs—from the simplest requisite up to the anastigmatic lenses. We should like to have you consult with us in the making up of your outfit. Perhaps we can help you. We can give you the benefit of an experience that is the result of our always having given our undivided attention to keeping abreast of the times in things photographic.

The Development of Your Negatives

We devote our most conscientious efforts to this department and spare no time or pains to secure all there is in your exposures for you. We refer you to Sierra Club members who have had us do their work.

R. A. LEET & CO.

INCORPORATED

**512-514 Thirteenth Street
Oakland, Calif.**

Camp Sierra and Giant Forest Stage Line

BRODER & HOPPING, PROPRIETORS
KAWEAH, CALIFORNIA

Camp Sierra is situated in the midst of the Giant Forest, fifty-five miles from Visalia. Special arrangements made for parties wishing to visit King's and Kern River Cañons and Mt. Whitney. Send for folder and full particulars. Connect with Southern Pacific at Visalia.

HOUSE & GALLAGHER

Proprietors of Mail Stage Line connecting with
..KING'S RIVER CANYON..

The General Grant and newly-discovered Big Trees are the largest Sequoias known. One hundred and twenty-five big trees in one grove alone. Visit the mills handling the biggest logs in the world. Summer Excursion Rates from San Francisco to Millwood and General Grant National Park, round trip railroad and stage fare, \$19.40. For further particulars, address SANGER, CAL.

FISHING TACKLE

A remarkable style of men's leggings that surpasses other kinds in durability; in their ease of adjustment; in their newly devised fastening, leaving nothing to catch on the brush; in their correct hygienic fit to the leg with enough elasticity to be comfortably close without compressing the veins; and in the keeping of all dirt out of the shoe.

These leggings will be sold at \$1.00 per pair, and to out-of-town purchasers can be mailed for 20c postage, so that mail orders (accompanied by measurement around the largest part of the calf of the leg over the trousers and a remittance of \$1.20) will be promptly filled.

Also an alpenstock that won't break and that is n't too heavy, Fishing tackle specially contrived for the great fishing streams of the Sierra;

And axes with scabbards; goggles for snowfields; also, hunting knives, will be furnished by

S. J. DEAN

1502 Market Street

San Francisco

NEVILLE & CO.

81 and 83 California Street

Manufacturers of and Dealers in

DUNNAGE BAGS TENTS AWNINGS

Bags, Twines, Hammocks

Camp Furniture, etc.

Tents to Rent

As this is the busy season order at once

GROCERIES

FOR

Mountaineers and Campers

A SPECIALTY

We know the right kind of provisions necessary for campers, and the exact amounts.

We have a salesman at our Pine Street store who has had a wide experience in this line and who will make out lists for approval.

Our condensed soups and other foods have been found to be just the thing for rough trips where reduced weight is essential.

We pack our goods so they arrive in the best possible condition.

GOLDBERG, BOWEN & CO.

432 Pine Street

San Francisco

Everything that is Practical and Necessary in

OUTING GOODS

(See circular letter)

Your Outing this year will be to Kern
River. We have what you want in

FISHING TACKLE

A few of our SPECIALTIES adaptable to
the trip are

CANVAS NORFOLK OUTING SUITS

PRACTICAL MOUNTAIN SHOES

KENWOOD SLEEPING BAGS

AIR MATTRESSES

CANVAS FOLDING BOATS

CLABROUGH, } 538 Market St.
GOLCHER & CO. }
SAN FRANCISCO

Do You Know the COAST LINE of the SOUTHERN PACIFIC

Its gardens and orchards, its rolling foot-hills, its fine air, its *one hundred miles beside the sea?*

Do You Know that it runs through an *atmosphere of romance*, because it traverses the line of the OLD MISSIONS

built by sandaled priests? They stand in the beauty of Italy and of Spain, and should give California a *distinctive architecture* that would fit the landscape as if a part of it.

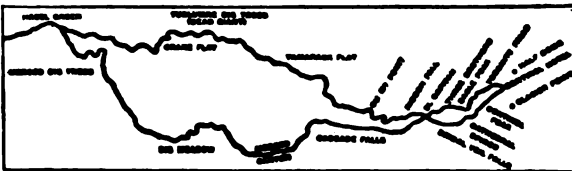
Do You Know THE SUNSET LIMITED

on this Royal Road—a hotel on wheels?
Then write for literature to any

SOUTHERN PACIFIC AGENT

E. O. McCORMICK,
Pass. Traf. Manager,

T. H. GOODMAN,
Gen. Pass. Agent,
SAN FRANCISCO, CAL.



THE "DOUBLE LOOP"

Address EUGENE R. HALLETT, General Pass. Agent
YOSEMITE TRANSPORTATION CO.
641 Market Street, San Francisco, Cal.

CALIFORNIA

THE LAND OF SURPRISES

Is Unique in its Advantages

FOR—The Man with the Hoe
With the Plow
With the Pruning Shears
With the Milking Stool
With the Bank Account

Is Unique in its Interest

FOR—The Tourist
Nature Lover
Mountain Climber
Health Seeker
Artist with a Camera
Artist with a Brush

Is Unique in its Pioneer Railroad

with three thousand miles
of track, reaching fifty-
seven counties, touching
every point of interest.

*To see California quickly,
easily, comfortably, take the*

Southern Pacific

E. O. McCORMICK,
Pass. Traf. Manager,
SAN FRANCISCO, CAL.

T. H. GOODMAN,
Gen. Pass. Agent,

PUBLICATIONS OF THE SIERRA CLUB

No. 1.—Articles of Association, By-Laws, and List of Members.

Nos. 4 and 5.—Maps of Portions of the Sierra Nevada adjacent to the Yosemite and to King's River, 1893.

No. 8.—Table of Elevations within the Pacific Coast, 1895, by Mark B. Kerr and R. H. Chapman. *Price, 25 cents.*

No. 12.—Map of the Sierra Region, May, 1896. *Price, \$1.50.*
To be had of Theodore S. Solomons, 508 California Street, San Francisco, California.

Nos. 2, 3, 6, 7, 9, 10, 11, 13, together forming Volume I. of the SIERRA CLUB BULLETIN.

Contents of Volume I.—Ascent of Mt. Le Conte; Address on Sierra Forest Reservation; California Outing; Crater Lake, Oregon; Diamond Hitch; Explorations North of Tuolumne River; Forest Reservations; From Fresno to Mt. Whitney, via Roaring River; From Gentry's to El Capitan and Yosemite Falls; Grand Cañon of the Tuolumne; Head-waters of King's River; Kern and King's River Divide; King's River and Mt. Whitney Trails; Knapsack Tours in the Sierra; Mt. Bernard; Mt. Tahoma; Mt. Whitney Trail; New Grove of Sequoia Gigantea; Notes on the Pine Ridge Trail; Route up Mt. Williamson; Search for a Route from the Yosemite to the King's River Cañon; Sources of the San Joaquin; Three Days with Mt. King; Through Death Valley; Through the Tuolumne Cañon; Tramp to Mt. Lyell; Upper Sacramento in October; Notes, Correspondence, and Reports.

Nos. 14, 15, 16, 17, 18 and 19, together forming Volume II. of the SIERRA CLUB BULLETIN.

Contents of Volume II.—Ascent of the White Mountains of New Mexico; Basin of the South Fork of the San Joaquin River; Conifers of the Pacific Slope, Parts I and II; Day with Mt. Tacoma; Early Summer Excursion to the Tuolumne Cañon and Mt. Lyell; Expedition of Prince Luigi Amedeo of Savoy to Mt. St. Elias; Explorations of the East Creek Amphitheater; From Mt. Rose to Mt. Shasta and Lower Buttes; Kaweah Group; Lava Region of Northern California; Mountain Trips: What to Take and How to Take It; Neglected Region of the Sierra; Observations on the Denudation of Vegetation—Suggested Remedy for California; On Mt. Lefroy August 3, 1896; On Mt. Lefroy August 3, 1897; Philip Stanley Abbot; Taking of Mt. Balfour; To Tehipite Valley from the King's River Grand Cañon; Up and Down Bubb's Creek; Wanderings in the High Sierra Between Mt. King and Mt. Williamson,—Parts I and II; Woman's Trip Through the Tuolumne Cañon; Yosemite Discovery; Notes, Correspondence, and Reports.

No. 20.—Volume III., No. 1, pp. 1 to 118—price \$1.00.—Ramblings Through the High Sierra (Reprinted from "A Journal of Ramblings," privately printed in 1875); Editorial Notice; Ouzel Basin; Forestry Notes.

No. 21.—Ramblings Through the High Sierra. (Specially bound; without Editorial Notes, etc.)

No. 22.—Volume III., No. 2, pp. 119 to 188.—Lake Tahoe in Winter; Ascent of "El Yunque"; Another Paradise; King's River Cañon Trail Notes; Ascent of "Matterhorn Peak"; Reports; Notes and Correspondence; Forestry Notes.

No. 23.—Volume III., No. 3, pp. 189 to 270.—Parks and Peaks in Colorado; The Work of the Division of Forestry in the Redwoods; The Mazamas on Mt. Jefferson; Wagon-Trips to the Sierra; The Big Basin; The Re-Afforesting of the Sierra Nevada; The Descent of Tenaya Cañon; An Ascent of Cathedral Peak; A Glimpse of the Winter Sierra; Notes and Correspondence; Forestry Notes.

PUBLICATIONS OF THE SIERRA CLUB—*Continued.*

- No. 24.—Volume III., No. 4, pp. 271 to 339.—The Mazamas on Mt. Rainier; Lassen Buttes: From Prattville to Fall River Mills; Zonal Distribution of Trees and Shrubs in the Southern Sierra; Mt. Washington in Winter; Round About Mt. Dana; Notes and Correspondence; Forestry Notes: Reports.
- No. 25.—Volume IV., No. 1, pp. 1 to 75.—Joseph Le Conte in the Sierra; El Capitan; Camp Muir in Tuolumne Meadows; The Sierra Club Outing to Tuolumne Meadows; In Tuolumne and Cathedral Cañons; The Great Spruce Forest and the Hermit Thrush; From Redding to the Snow-clad Peaks of Trinity County; Trees and Shrubs in Trinity County; Notes and Correspondence; Forestry Notes; Reports.
- No. 26.—Vol. IV., No. 2, pp. 76 to 176.—Into the Heart of Cataract Cañon; My Trip to King's River Cañon (Reprint); Conifers of the Pacific Slope, Part III; Birds of the High Mountains; Notes and Correspondence; Forestry Notes; Reports.
- No. 27.—A Flora of the South Fork of King's River from Millwood to the Head-Waters of Bubb's Creek.
- No. 28.—Vol. IV., No. 4, pp. 177 to 252.—Among the Sources of the South Fork of King's River, Part I; With the Sierra Club in King's River Cañon; Red-and-White Peak and the Head-Waters of Fish Creek; Mt. Whitney, Whitney Creek, and the Poison Meadow Trail; A New-Year Outing in the Sierra; The Ascent of Volcano Mayon; Notes and Correspondence; Forestry Notes; Reports.

On receipt, in good condition, of a full set of the numbers comprising Volumes I. or II., together with the sum of \$1.25, a bound volume will be forwarded, postpaid.

Each number 50 cents.

Volume I., No. 3, and Volume II., No. 1, are out of print.

Members may have additional copies of the BULLETINS at half rates.

Copies of the above publications may be had on application to the Secretary, Room 16, Third Floor, Mills Building, San Francisco, Cal.

• • • • •

•

•

•

•

•

•

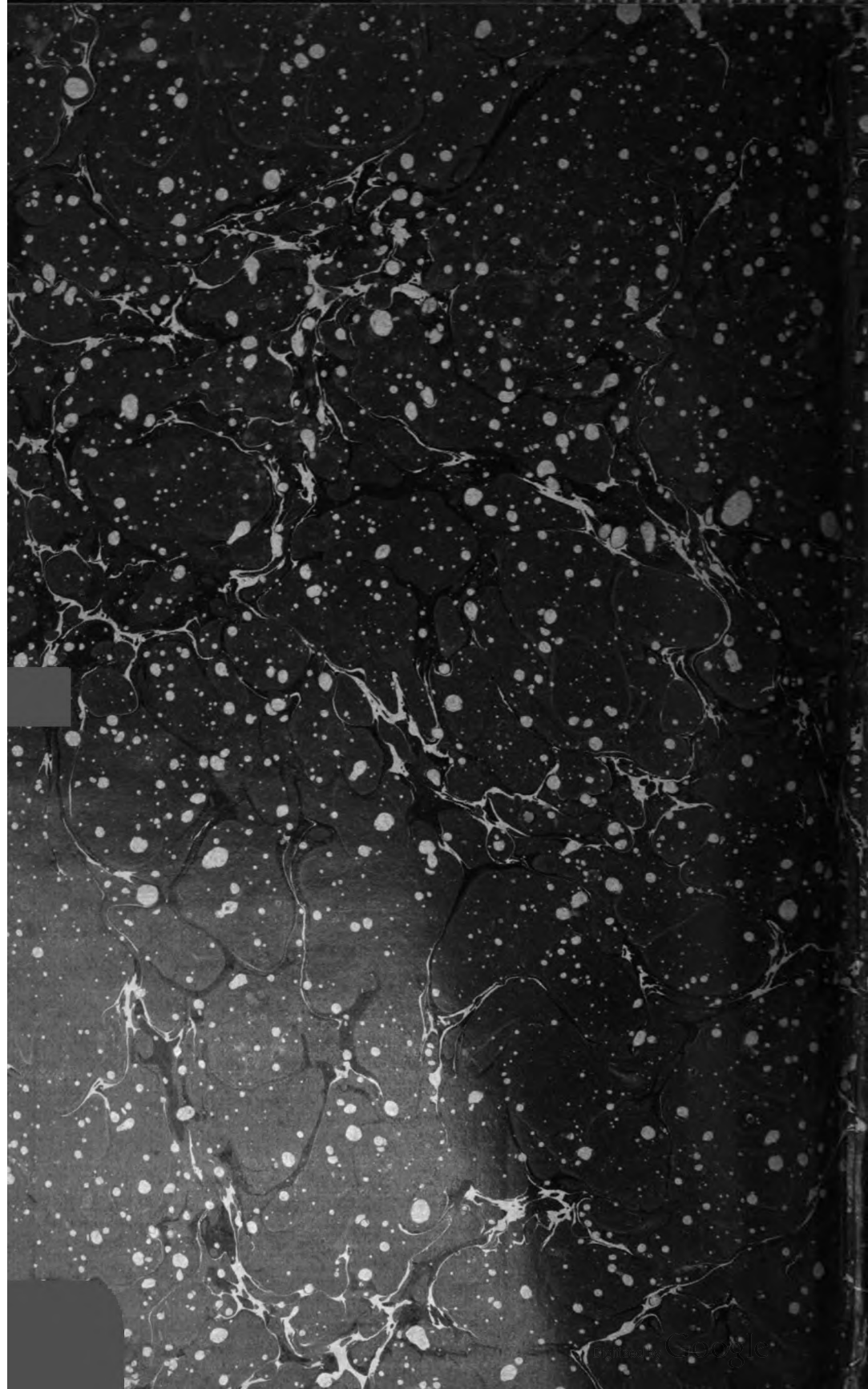
•

•

•

•

LOCKED STICKS



DATE DUE			

